

**FERROGRAPH**  
**F307 AMPLIFIER**

**SERVICE MANUAL**

**FERROGRAPH**

The Company reserve the right to modify designs  
and specifications without prior notice, in pursuance  
of a policy of continuous technical improvements

## F307 SERVICE MANUAL

There are one or two additional items for the F307 Service Manual, and these are given below. It is suggested that this sheet be inserted in the Manual with a note on the appropriate page, or each paragraph could be cut and inserted on the actual page.

### Page 3

The 'on' lamp is powered from the main 70V D.C. line which also supplies the power amplifiers. A sudden surge of near maximum power to the loudspeakers may lower the supply voltage momentarily and cause the lamp to flicker. This is quite normal, although of course it should only occur when the loudspeaker is driven by a loud signal, usually low frequency.

### Page 7

In the second last line of "Note", the small resistor should be approximately  $10\Omega$ - $20\Omega$ .

### Tape Replay Inputs

Although not specifically stated in the text or indicated in diagrams Figs. 4 & 5, the Tape Replay inputs are controlled by the Mode Selector buttons (Left, Right, Stereo) in the same way as the other inputs. In each channel the level of signal is still controlled by the Tape Input potentiometer (Left or Right), and therefore these must be at maximum (fully clockwise) when measuring the input sensitivity.

### Fig. 4 - MONO

In MONO operation with the 'Left' button pressed, the Left Tape Replay signal is connected to both inputs, and similarly with the Right button pressed the Right Tape Replay signal is connected to both Tape Replay inputs. Note that the Tape Input potentiometers still control the signal level of each channel.

### Fig. 5 - DUAL MONO

In DUAL MONO operation with both 'Left' and 'Right' buttons pressed, the Left and Right Tape Replay signals are in parallel and connected to both inputs. Note that although both channels carry the same 'combined' signal, the Tape Input Potentiometers still control the signal level of each channel.

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## GENERAL SPECIFICATION

### POWER OUTPUT

Minimum rated output per channel (both channels driven)

Load	R. M. S. power (sine wave)	I. H. F. M. power (music)
15 ohm	15 watts	20 watts
8 ohm	20 watts	25 watts

### DISTORTION

At all levels up to rated power output (both channels driven)  
<0.13% total harmonic distortion at 1kHz \*

### FREQUENCY RESPONSE

All inputs except Magnetic P. U.

20Hz - 25kHz  $\pm 1$ dB  
15Hz - 30kHz +1, -3dB

Magnetic P. U. input - R. I. A. A. characteristic  $\pm 1\frac{1}{2}$ dB

### HUM AND NOISE

Volume controls at maximum, input short circuit.

Tone controls and filter at level (referred to 15W into 15Ω)

Tape/Ceramic P. U./Radio/Aux. inputs <-70dB

weighted (C. C. I. F.) <-80dB

Magnetic P. U. input <-60dB

weighted (C. C. I. F.) <-75dB

### BASS CONTROL

Range approximately  $\pm 17$ dB at 50Hz

### TREBLE CONTROL

Range approximately  $\pm 13$ dB at 15kHz

### FILTERS

Low pass filters, falling by approximately 30dB per octave,  
selected by push buttons  
-3dB at 10kHz, 7kHz or 5kHz

### CROSSTALK

Dependent upon input source impedance:

Record/Replay and interchannel typically better than

-60dB (30Hz-1kHz)

-45dB (1kHz-10kHz)

### POWER SUPPLY

117/220/240 Volts A. C. 50-60Hz

### POWER CONSUMPTION

80 watts (both channels driven)

### OVERALL DIMENSIONS

16 $\frac{1}{2}$  in. wide x 5 in. high x 9.5/8 in. deep

Knobs protrude 1 in. from panel

Rear clearance for connections 1 $\frac{1}{4}$  in.

### WEIGHT

16 lbs.

\* < 0.25% t.h.d. at 1kHz prior to Serial No. A2000

## INPUTS & OUTPUTS

### CERAMIC P.U./RADIO/AUX. INPUTS (phono plugs)

(Selected by rotary switch on front panel)

Overload level for 0.5% T.H.D.

Stereo and Mono	> 5V
Dual Mono	> 1V

Input level for 15 watts into 15 ohm at 1kHz

Stereo and Mono	< 100mV
Dual Mono	< 200mV

Input impedance

All modes	2MΩ each input
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### MAGNETIC P.U. INPUTS (phono plugs)

(Response equalised to R.I.A.A. characteristic)

Input level for 15 watts into 15Ω at 1kHz

Stereo and Mono	< 3mV
Dual Mono	< 6mV

Input impedance (selected by switch on rear panel)

All Modes	100kΩ, 68kΩ or 47kΩ
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### TAPE REPLAY INPUTS (phono plugs)

(Sensitivity controlled separately on each channel by variable pre-set control under front flap)

Input level for 15 watts into 15Ω at 1kHz (at maximum sensitivity)

Stereo	< 150mV
Mono and Dual Mono	< 200mV

Minimum input impedance (pre-set control at max. sensitivity)

All modes	> 50kΩ
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### TAPE RECORD OUTPUTS (phono plugs)

Output signal level - approximately the same level as the input signal at the Ceramic P.U., Radio and Aux. inputs and about 30 times that at the Magnetic P.U. input.

### SPEAKER OUTPUTS (D.I.N. Plugs)

(Controlled by switch under front flap)

Suitable for loudspeakers of 8-16Ω impedance.

For output power see General Specification.

### PHONES OUTPUT (Gauge A, 3 contact plug)

(Controlled by switch under front flap)

Suitable for most headphones of 3Ω impedance or greater

## F307 SERVICE MANUAL

### OPERATION

The controls and switches on the F307 Stereo Amplifier operate conventionally, and the plugs and sockets on the rear panel are clearly marked with the appropriate connections. The "switched A.C. mains outlets" are wired in parallel and use 'American' 2-pin plugs. The power from these is not fused but is switched by the F307 on/off switch.

Before the amplifier is switched on, the voltage selector setting should be checked to be correct for the power supply. For a few seconds after first switching on, low frequency noise ("thumps", etc.) may be heard from the loudspeakers. This is due to the charging up of the electrolytic capacitors and is quite normal.

On the front panel, the 'Phones' socket is controlled by the switch under the flap. With the speaker switch at 'off', the headphones are on and the loudspeakers are disconnected. With the switch at 'on', the loudspeakers are in circuit but a signal may also be heard in the headphones (which are still connected between the outputs), but this is only the 'difference' signal between the two channels.

It should also be noted that coincidence of the Volume controls settings does not necessarily represent equal output from both channels, and the final Volume settings for channel balance should be determined by ear.

## MAINTENANCE

The F307 amplifier requires no routine maintenance, and being constructed entirely of solid state devices, will give an indefinite life of satisfactory performance.

### Fuses

Should an overload or short-circuit cause one of the D.C. fuses to blow, the fault must be corrected before the fuse is replaced. This is a tubular fuse, 20 mm. long x 5 mm. dia., rated at 0.75 Amp (Serial Nos. prior to A2000) or 1 Amp (Serial Nos. A2000 onwards). Amplifiers prior to Serial No. A2000 but modified to the 'Mk. 2' output stages can be fitted with 1 Amp D.C. fuses. Under no circumstances should any higher value be used as this will remove the protection provided by the fuse, making it possible to over-run and destroy the output transistors. For the same reasons, only a standard (quick-action) fuse should be fitted, and on no account should an anti-surge or delay fuse be used.

The Mains fuse is also 20 mm. long x 5 mm. dia., rated at 1 Amp (Serial Nos. prior to A1000) or 1.5 Amp (Serial Nos. A1000 onwards), and again, an anti-surge or delay fuse must not be fitted.

### Removal from wooden case

The F307 amplifier may be removed from the wooden case by placing it upside down and slackening the two small screws near the front. On removing the four screws on the underside of the case (not the feet), the chassis may be slid out backwards.

The amplifier is replaced in the case in the reverse manner, the two small screws being tightened until the top of the front panel contacts the case.

### Removal from metal case

The F307 amplifier may be removed from the metal case by undoing the two screws at the front underside of the case (not the feet) and also the two screws holding the rear feet. The chassis can then be slid out of the case. The amplifier should be replaced in the case in the reverse manner.

### !Power on! lamp

A small pilot-lamp indicates when the power to the amplifier is switched on. To replace this, the amplifier should be removed from its case as above, when the lamp holder can be unclipped from the bracket and withdrawn from the hole in the metal panel. Once clear, the bulb may be unscrewed and replaced by type LES-14 Volt (455-002).

### TECHNICAL DESCRIPTION

The F307 has two identical channels. In the following explanation only the Left channel is described, the corresponding circuit reference for the Right channel being given in brackets ( ).

There are four inputs per channel, three being identical. The "Magnetic P.U." (Q1) has an additional pre-amplifier using low noise pnp transistors VT100 & 101 (VT103 & 104), with a feedback loop C104/R103 + C103/R107 (C113/R126 + C112/R125) to provide equalisation to the R.I.A.A. characteristic. Bass roll-off is introduced by C105/R109 (C114/R127); C118 (C119) suppresses R.F. interference (not fitted to some earlier models).

This or one of the other inputs, as selected by SW701, is connected to the high impedance input 'follower' circuit of the transistor VT102(VT105) - p channel F.E.T. Protection from stray leakage currents at the input is provided by R136/MR100 (R137/MR101). The signal then goes to the push-button "Mode Selector" switch SW200, and with the 'Left' button pressed, the Left channel signal is fed to both power amplifiers (with the 'Right' button pressed, the Right channel signal is fed to both power amplifiers). With the 'Left' and 'Right' buttons pressed simultaneously, both signals are fed to both power amplifiers. With the 'Stereo' button pressed, both channels are completely separate, the Left channel being fed to the Left power amplifier only and the Right channel signal to the Right power amplifier only.

5, 7, & 10 kHz. FILTER RESPONSE

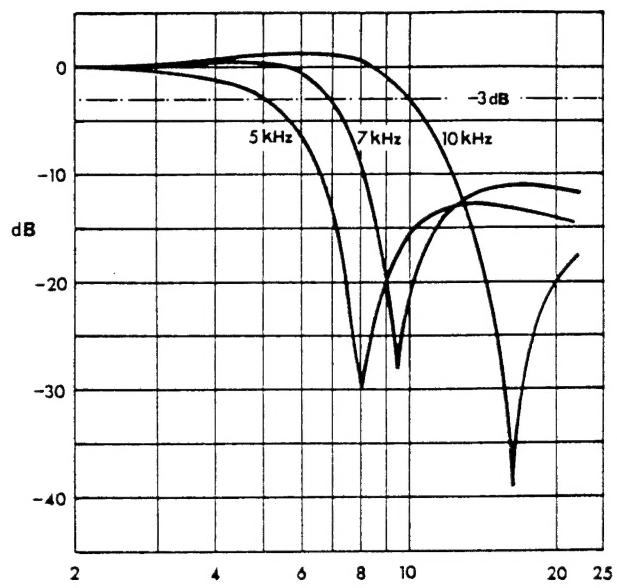


FIG. 1. EFFECT OF LOW PASS FILTER CONTROLS

TONE CONTROL RESPONSE

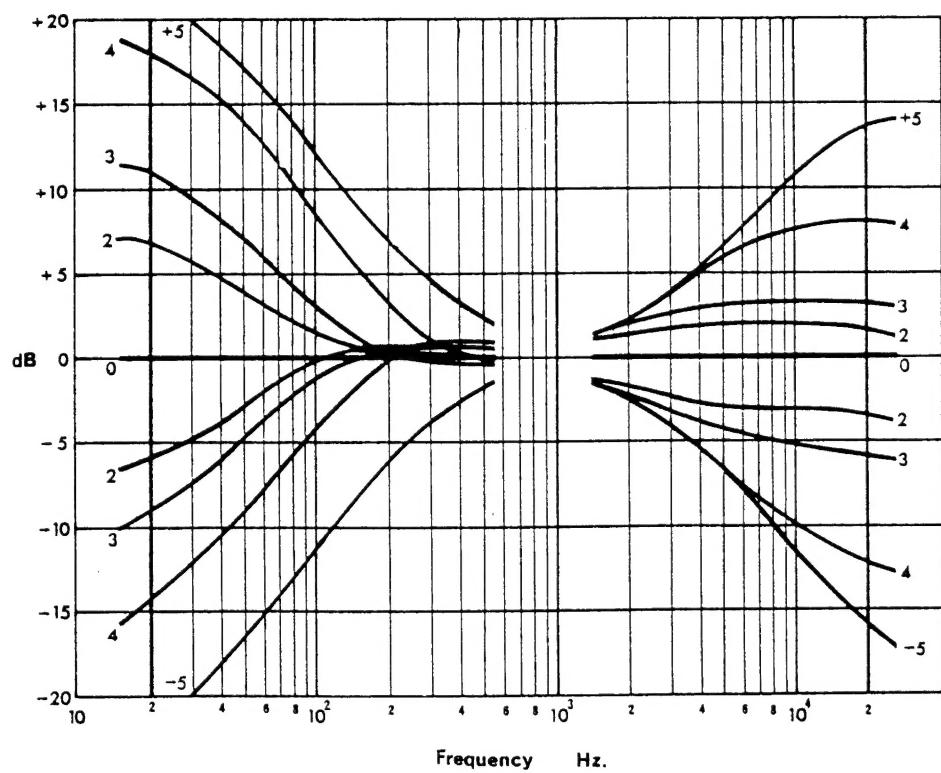


FIG. 2. EFFECT OF BASS AND TREBLE CONTROLS

R114(R132) is connected in parallel with R113(R131) to provide correct impedance matching between the pre-amplifier and the filter network when the 'Left' button only ('Right' button only) is pressed, as in this condition both filter network inputs are connected in parallel with the single pre-amplifier output. On 'double mono' - both 'Left' and 'Right' buttons pressed simultaneously - the two filter networks are connected to both pre-amplifier outputs in parallel, while on 'Stereo' both channels are completely separate. R114(R132) is essential for correct operation of the filter networks on 'mono'.

The push-button "Low-pass Filter" switch SW300 provides 3dB roll-off at 10kHz or 17kHz as selected, or at 5kHz with both buttons depressed, see Fig. 1. The "Tape Record" output is taken immediately after the filter. The "Output" switch SW703 selects either this 'source' signal or the 'tape' signal from the "Tape Replay" input - signal level preset by RV709 (RV713). The signal volume is controlled by RV710 (RV714) and the 'follower' stage VT401 (VT403) feeds the Bass and Treble controls, which form part of the feedback network of VT400 (VT402) in a standard 'Baxendall' tone control circuit, see Fig. 2. All these pre-amplifiers, etc. are powered from a -42V D.C. supply (X-Y).

The power amplifiers have a separate +65V D.C. supply (A-B), the transformerless output having negative feedback taken from both sides of the loudspeaker coupling capacitors C500/C700 (C500/C701). R511 provides feedback to ensure high stability even on reactive loads, while feedback via R512 reduces the effective reactance of C500/C700 (C500/C701) to a low value. The quiescent current is set by R518, in parallel with R506, and compensation for temperature variations in the output transistor surroundings is provided by the forward resistances of MR500 & 501. The significance of R504 should not be overlooked as, although connected between 'earth' and 'earth', it is essential to isolate the output stage current from the input.

## TESTING

The following instructions are intended to be used in conjunction with Figs. 3, 4 & 5. Each Speaker output should be loaded with a 15Ω resistor (rated at 20W). Except when specifically required otherwise, the Bass and Treble Controls should be at their mid positions and the Low Pass Filter "Level" button should be pressed.

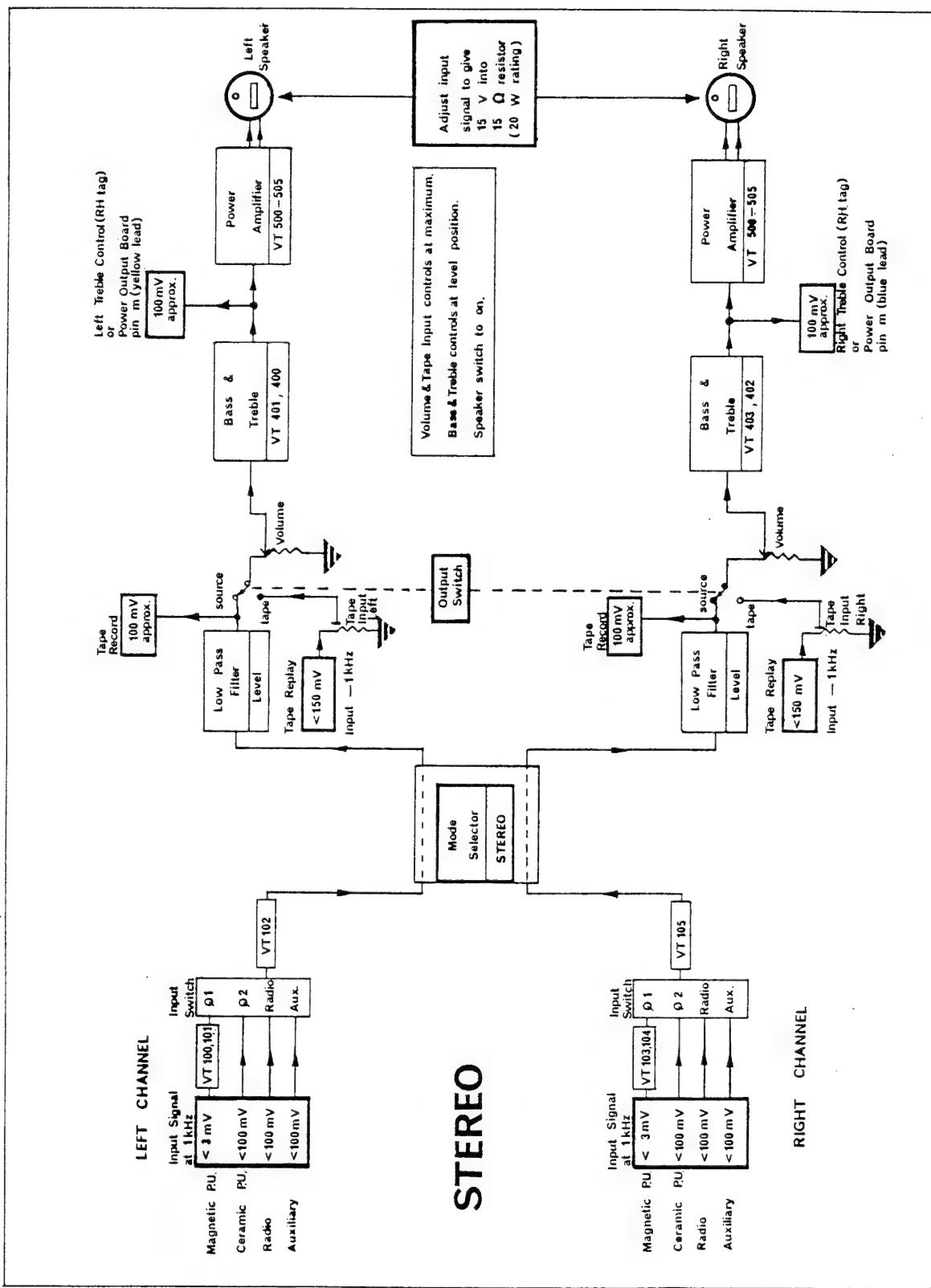


FIG. 3. BLOCK DIAGRAM — STEREO

## Apparatus required

To carry out all of these tests, the following are required :

- a) Two resistors -  $15\Omega$  (rated at 20W)
- b) Ferrograph Recorder Test Set

Instead of item b), the following would be required :

- c) Millivoltmeter (3mV-30V)
- d) Audio Signal Generator (sine-wave, 20Hz-25kHz)
- e) Distortion Meter
- f) 1kHz Low Distortion Oscillator (<0.05%, could be d) above)

Note When connecting equipment to the amplifier, it is essential to ensure that there is no common earth path between the inputs and outputs as this could lead to part of the output signal current flowing through the input earth. When the high sensitivity inputs are being used, this could give rise to spurious noise or distortion readings. When using combined test equipment, such as the Recorder Test Set, this can usually be prevented by the insertion of a small resistor in series with the input ("Meter") earth lead.

## Gain (Input sensitivity)

A 1kHz sine-wave signal should be fed into the appropriate input and, with the Volume control at maximum (fully clockwise), the input signal level should be adjusted until a reading of 15V is obtained across the  $15\Omega$  'Speaker' output load. The voltage for each input should be as shown in Fig. 3. When the Tape Replay input sensitivity is being measured, the 'Tape Replay' control must also be at maximum (fully clockwise).

## Distortion

The overall distortion should be measured at 1kHz, and for this it is essential that the signal generator have a low distortion content (<0.05%). If a Low Distortion Oscillator is not available, it is advisable to check the generator before proceeding. Care should be taken to ensure that the input and output earths are not connected together, and in view of the low level of distortion being measured, if the distortion meter is fitted with a low frequency cut switch (high pass filter) this should be utilised.

At all levels up to the maximum rated output of 15V across  $15\Omega$  (viz 15W), distortion should be less than 0.25% (prior to Serial No. A2000) or less than 0.18% (Serial No. A2000 onwards).

## Output Power

With both 'Speaker' outputs driven, an output of 15V across a  $15\Omega$  load (15W) should be obtained from each output before the distortion rises above the specified limits.

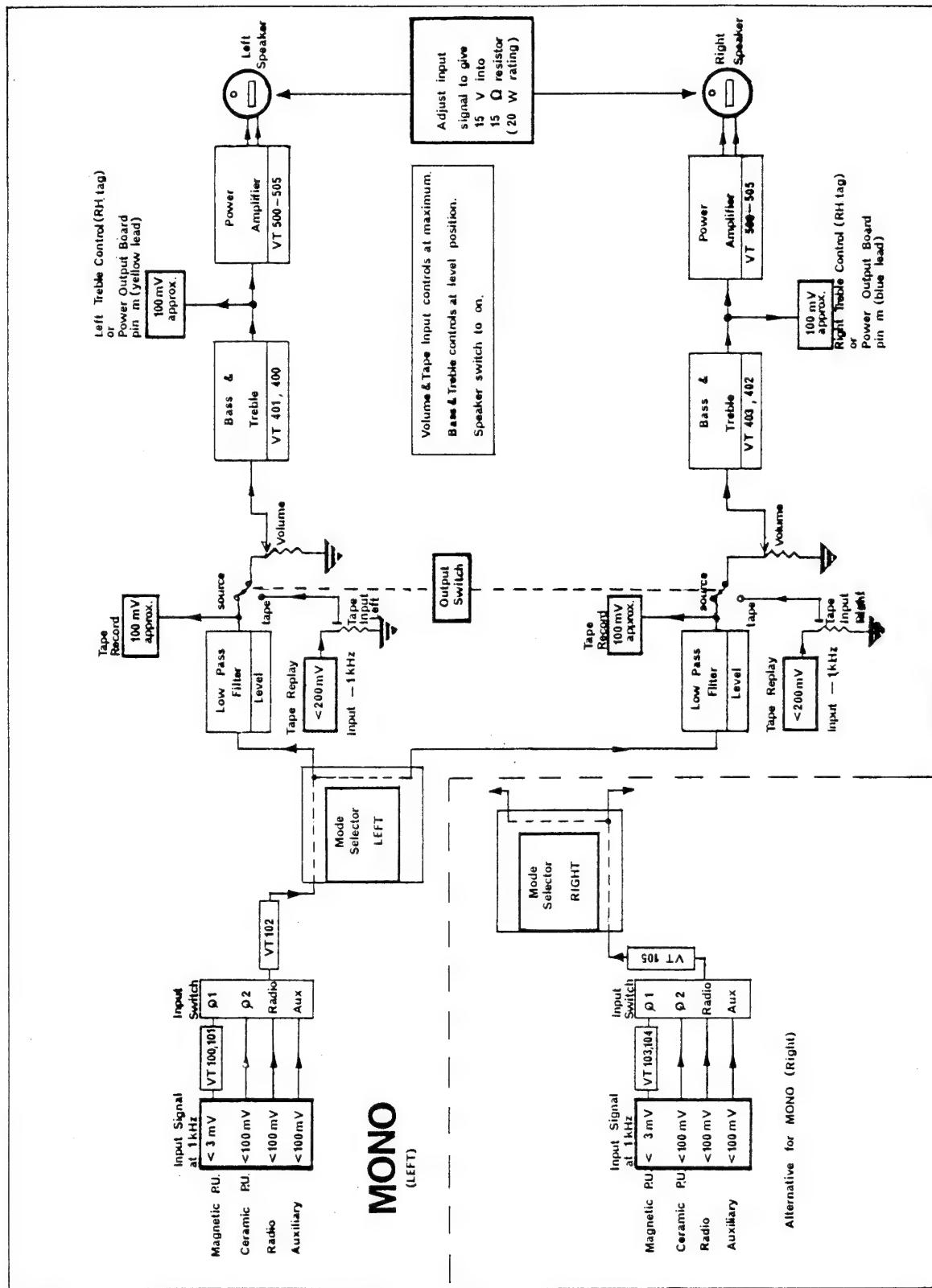


FIG. 4. BLOCK DIAGRAM — MONO

### Frequency Response

The input should be turned down to give a level of approximately 6dB below maximum output level viz. with an output of about 7V across 15Ω (signal fed into Tape, Ceramic P.U., Radio or Aux. Inputs), when the frequency response should be :-

$$\begin{aligned}20\text{Hz} - 25\text{kHz} &\text{ within } \pm 1\text{dB} \\15\text{Hz} - 30\text{kHz} &\text{ within } +1, -3\text{dB}\end{aligned}$$

To check the frequency response of the Magnetic P.U. Input, the input signal should be reduced to give an output level of approximately -15dB (about  $2\frac{1}{2}$ V across 15Ω). Compared to that at 1kHz, the response should be :-

$$\begin{aligned}+13.1\text{dB } (\pm 1\frac{1}{2}\text{dB}) &\text{ at } 100\text{Hz} \\-13.7\text{dB } (\pm 1\frac{1}{2}\text{dB}) &\text{ at } 10\text{kHz}\end{aligned}$$

### Low Pass Filter

The effect of pressing the '10kHz', '7kHz' buttons and also both together ('15kHz') should be checked by setting the response at 1kHz with the 'Level' button pressed. The appropriate button(s) should be pressed and the signal generator frequency increased until the response falls by 3dB. This should be between 9-11kHz, 6-8kHz and 4-6kHz for the 10kHz, 7kHz and 5kHz buttons respectively. Typical response curves for the Low Pass Filter are given in Fig. 1.

### Bass & Treble Controls

The effect of the tone controls should be measured with an input giving approximately 20dB below maximum output at 1kHz viz. at about 1.5V across 15Ω. With the Bass and Treble controls central, compared to the response at 1kHz, the response should be :-

$$\begin{aligned}+11\frac{1}{2}\text{dB } (\pm 1\text{dB}) &\text{ at } 100\text{Hz, Bass control at maximum (fully clockwise)} \\-12\text{dB } (\pm 1\text{dB}) &\text{ at } 100\text{Hz, Bass control at minimum (fully anticlockwise)} \\+10\text{dB } (\pm 1\text{dB}) &\text{ at } 10\text{kHz, Treble control at maximum (fully clockwise)} \\-10\text{dB } (\pm 1\text{dB}) &\text{ at } 10\text{kHz, Treble control at minimum (fully anticlockwise)}\end{aligned}$$

### Signal-to-Noise Ratio

The noise voltage should be measured with all connections to the inputs removed, with the Volume control at maximum and with the Bass,

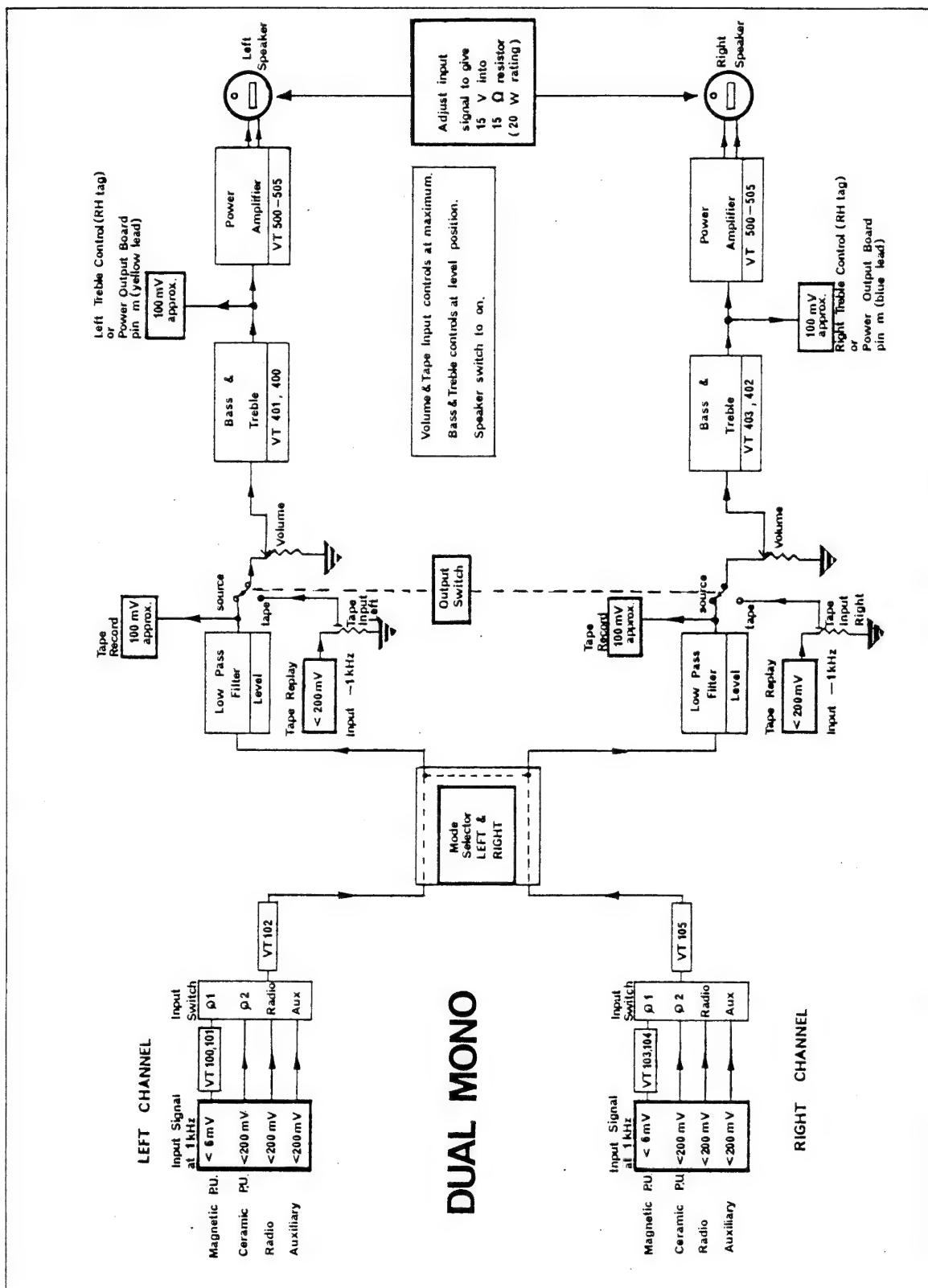


FIG. 5. BLOCK DIAGRAM — DUAL MONO

Treble and Filter controls at 'level'. When the 'Input' switch is set to the appropriate input, the following readings should be obtained.

Tape/Ceramic PU/Radio/  
Aux Inputs : 4.7mV (-70dB ref. 15V across 15Ω)

Magnetic PU Input : 15mV (-60dB ref. 15V across 15Ω)

An additional Signal-to-Noise check should be carried out with the Low Pass Filter '10kHz' button pressed. If the noise reading is too high, the clamp holding the filter coil L700 (or L701) should be slackened and the coil rotated to the minimum hum position before retightening the clamp.

#### MISCELLANEOUS

##### Power Output Transistors

If for any reason it is necessary to replace one of the driver or output transistors VT500-503, it is advisable to remove and check all four devices before refitting and switching on again. This is because a defective output transistor could be caused by a defective driver transistor, or vice versa. If the replacement has been made necessary by an overload on the output, it is also advisable to check all wire-wound resistors in the output stages - R500, R501, R715(R716).

After switching on and allowing 5 minutes for warming up under 'no signal' conditions, the power amplifier quiescent current\* should be set to between 22 and 60mA by altering the value of R518 (which is in parallel with R506). After a further 'warming up time' of approximately 30 minutes, again with no signal, the current should not exceed 60mA, and if necessary R518 should be reset to ensure this.

On earlier models, R518 is a fixed value resistance mounted on the top of R506 (Right channel) or on a separate tagstrip (Left channel) immediately behind the Bass & Treble controls. On these models it is suggested that R518 be replaced temporarily by a potentiometer (e.g. 500Ω or 1000Ω) which should be adjusted to give the correct current as above. The potentiometer can then be measured and a

\*This is the current passing through the appropriate D.C. Fuse, and a convenient way to measure this is to remove the fuse and connect the milliammeter across the fuse holder.

fixed resistor of the same value (or nearest 'preferred' value) can be fitted and the current re-checked.

When checking the amplifier from 'cold', the current may be 22mA or less. This is quite in order, and may be taken as a useful consideration when working on a 'cold' amplifier. However, if the current is set before the transistors have reached normal quiescent operating temperatures, it must be ensured that the amplifier current does eventually reach 22mA under 'no signal' conditions.

It will also be observed that the quiescent current is high immediately after the amplifier has been run with a sine wave signal (it may be as much as 100mA). This also is quite in order provided that the current shows a steady fall after the drive signal has been removed.

The voltage at the centre line of the output stages (junction of C502/R509/R502/R501/R500) should be approximately central between 'earth' and 'H.T.'. If not, it can be reset by a slight adjustment of the resistor values in the bias chain at the base of VT504 (R509/R510), although should a change of more than 10% be necessary, it is advisable to recheck the associated circuitry.

#### Replacement of Power Transistors

(prior to Serial No. A2000)

The power output transistors type 39285 used on the F307 Mk 1 amplifiers are no longer available and must be replaced by transistors type 16020, which are used on the current Mk 2 amplifiers (Serial No. A2000 onwards). Should only one fail, both output transistors VT500 & VT502 must be replaced.

As the replacement transistors type 16020 are physically larger than type 39285, it is necessary to drill the heat sink to accommodate them and the drilling details are given in Fig. 6a. Alternatively, a replacement heat sink could be obtained from the Ferrograph Service Department, South Shields.

When fitting the new power transistors, the circuit must be modified from that shown in Fig. 16 to that in the complete circuit diagram Fig. 15. This involves removing part of the copper linking the emitter of VT503 and the junction of R500/R501/C500 etc.

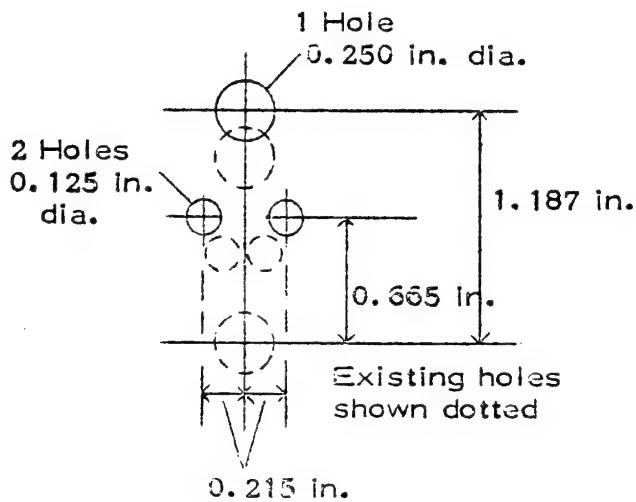


Fig. 6a

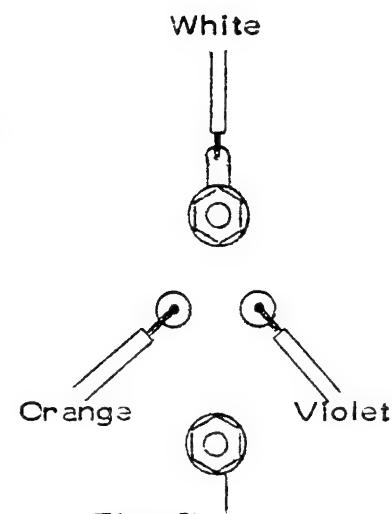


Fig. 6b

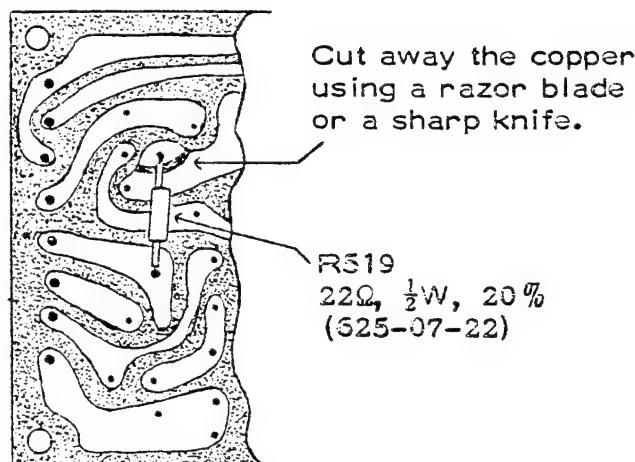


Fig. 6c

Fig. 6. Power Amplifier Modifications (prior to Serial No. A2000)

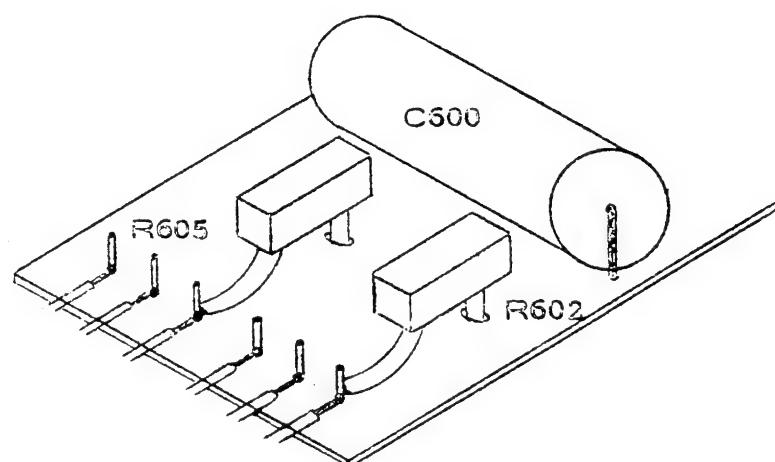


Fig. 7. !Phones! Output Modification

A  $22\Omega$  ( $\frac{1}{2}W$ , 20%) resistor should then be soldered between this point (emitter of VT503) and the connections to the collector of VT502, mounted on the copper side of the P.C. board as shown in Fig. 6c.

After modifications have been carried out and the amplifier re-assembled, the quiescent current should be reset as described above.

#### Radio Interference

In certain circumstances when the F307 is used in close proximity to a transmitter, radio interference may occur. On later models (Serial No. A1839 onwards) capacitors (1000pF) are fitted across the base and emitter of transistors VT100 & VT103, and on earlier amplifiers these could be added.

If the signal strength in the area is so great that further suppression is necessary, further 1000pF capacitors could be fitted across the base and emitter of transistors VT101 & VT104. In each case the capacitor should be mounted on the copper side of the P.C. board, directly beneath the appropriate transistor.

#### 'Phones' Output

The impedance and sensitivity of headphones can vary considerably and this will affect the setting of the Volume control needed for a suitable listening level, although the quality of reproduction will depend almost entirely on the quality of the headphones used. On earlier models, prior to Serial No. A3200 approximately, the maximum volume available from the 'Phones' output may not be sufficient for certain types of headphones. It is possible to remedy this by fitting the resistors used on the later models (R602, R605 -  $56\Omega$ , 3W, 10%; 626-015). When fitting the new resistors, which are physically much larger, they should be kept clear of the electrolytic capacitor C600 (see Fig. 7). To assist in this, one tag should be soldered to the pin nearest to it (R602 - pin k, R605 - pin p) and the other tag to the hole nearer C600.

## SPECIAL MODELS

### F307K Amplifier (SEMKO approved) - Serial Nos. 20,000 onwards

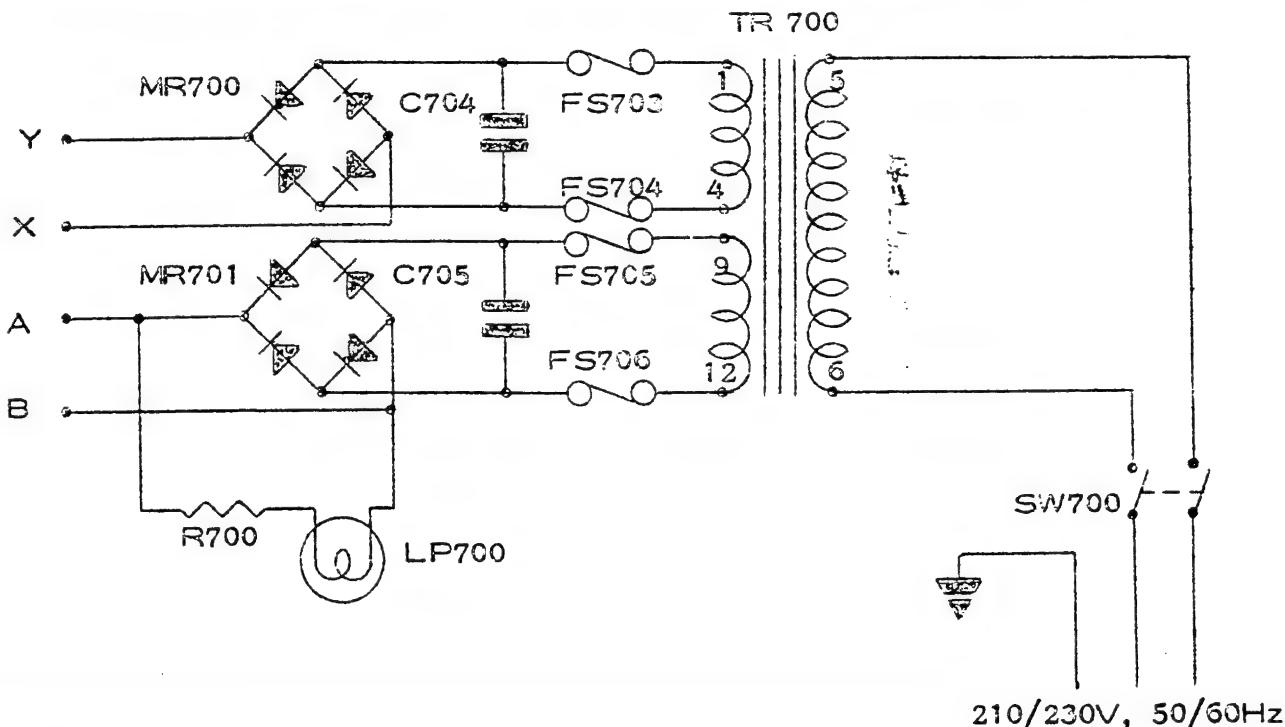
The SEMKO version of the F307 Amplifier has been modified from the standard model to conform to the SEMKO regulations regarding electrical standards. These changes do not affect the operation and performance, but do involve slight changes in the procedure for connecting up and in the replacement of fuses.

#### Power Supply

The power supply plug and socket and the switched A.C. mains outlets are not fitted, and connection to the power supply is via an attached three way lead. No voltage selector is fitted, and the amplifier should be powered from a supply of 210-230 Volts, 50 or 60 Hz.

#### Fuses

The 'Mains' fuse is omitted and is replaced by four fuses in the secondary windings of the mains transformer. These fuses are mounted internally on a special board and are all 20 mm. x 5 mm. dia.; two are rated at 0.8A and two at 2A, as indicated on the board.



#### Parts Added

FS703 & FS704	-	Fuse 2A (20 mm x 5 mm dia.)	380-009
FS705 & FS706	-	Fuse 0.8A (20 mm x 5mm dia.)	

## HISTORY OF MODIFICATIONS

Serial No.	Before	After	Comment
A400 approx.	D.C. fuses - FS701, FS702 1 Amp (380-000)	D.C. fuses (FS701, 702 750mA (380-008)	Both D.C. fuses should be 750mA on all Mk 1 models (Serial No. prior to A2000)
	None	Resistor R717 (R718) 100Ω, $\frac{1}{2}$ W, inserted between RV710 (RV714) and C407 (C416)	Resistor could be inserted on earlier models to reduce harmonic distortion.
A1000	200/250V Mains Transformer TR700 (T1699)	117/220/240V Mains Transformer TR700 T1703	No change necessary on earlier models.
	Voltage Selector VS700 (920-000)	Voltage Selector VS700 (920-001)	
	Mains Fuse FS700 1 Amp (380-000)	Mains Fuse FS700 1.5 Amp (380-004)	
	Black cap fitted to Mains fuseholder	Red cap fitted to Mains fuseholder	
A1310 approx.	Transistor VT504 type 40317	Transistor VT504 type 40360	Fit transistor type 40360 on earlier models only if VT504 becomes defective
A1120 - 1139 inc.	Transistor VT503 type 40362	These models fitted with type 2N5322	Fit transistor type 40362 if replacement is required
A1839	None	Capacitor C118 (C119) 1000pF (131-766) fitted to (base - emitter) VT100 (VT103)	If radio interference is heard from the amplifier see "MISCELLANEOUS - Radio Interference"
A2000		Driver and output stages of Power Amplifier modified.	If power amplifier failure occurs, see "MISCELLANEOUS - Replacement of Power Transistors"
A2155	Resistor R518 - 'Selected' value to set power amp. current.	Potentiometer RV518, 500Ω (582-026) mounted on heat sink.	No change necessary on earlier models.

Serial No.	Before	After	Comment
A3200 approx.	Resistor R602 (R605) 270Ω, ½W - 'phones' attenuator.	Resistor R602 (R605) 56Ω, 3W (626-015)	56Ω resistors could be fitted to earlier models (if more signal is required from 'Phones' Output see "MISCELLANEOUS - 'Phones' Output")
A3441 - 3540	Diode MR500, 501, type 1N3754	These models fitted with type BAX 16	Diode BAX 16 or 1N3754 can be fitted as replacement on all models.
A4054	Diode MR500, 501 type 1N3754	Diode MR500, 501 type BAX 16	Diode BAX 16 or 1N3754 can be fitted as replacement on all models.

## HISTORY OF PARTS LISTS CHANGES

Cct. Ref.	Changed from		Changed to		At Ser. No.
*C118	Not fitted		1000pF 160V 10%	131-766	A1839
*C119	Not fitted		1000pF 160V 10%	131-766	
R411	68kΩ 1/2W 10%	625-13-68k	22kΩ 1/2W 10%	625-13-22k	A2700
R423	68kΩ 1/2W 10%	625-13-68k	22kΩ 1/2W 10%	625-13-22k	approx.
R500	1Ω 1W Wirewound	626-001	0.35Ω <sup>+</sup> , 0.35Ω 1W w/w	626-005	A200
R501	1Ω 1W Wirewound	626-001	0.35Ω <sup>+</sup> , 0.35Ω 1W w/w	626-005	approx.
*R510	270Ω Average Value		500Ω Linear Preset	582-026	A2155
*R519	Not fitted 4.7Ω 1/2W 10%	624-007	4.7Ω 1/2W 10% 22Ω 1/2W 10%	624-007 625-07-22	A600 A2000
*VT500	Transistor type 39285	625-009	Transistor type 16020	625-019	A2000
*VT502	Transistor type 39285	625-009	Transistor type 16020	625-019	
R600	3.9kΩ 1/2W 10%	625-13-3k9	2.2kΩ 1/2W 10%	625-13-2k2	A600
R601	3.9kΩ 1/2W 10%	625-13-3k9	2.2kΩ 1/2W 10%	625-13-2k2	approx.
*R602	270Ω 1/2W 10%	625-13-270	56Ω 3W 10%	626-015	A3200
*R605	270Ω 1/2W 10%	625-13-270	56Ω 3W 10%	626-015	approx.
*R717	Not fitted		100Ω 1/2W 10%	625-10-100	A400
*R718	Not fitted		100Ω 1/2W 10%	625-10-100	approx.
*TR700	Mains Transformer T1699		Transformer(T1703)	022-105	A1000
*FS700	Mains Fuse 1A	380-000	Mains Fuse 1.5A	380-004	
*FS701	D. C. Fuse 0.75A	380-008	D. C. Fuse 1A	380-000	A2000
*FS702	D. C. Fuse 0.75A	380-008	D. C. Fuse 1A	380-000	

\*Comment on this change is included in 'History of Modifications'.

PARTS LISTS

Cct. Ref. 100 PRE-AMPLIFIER BOARD (Assembly 025-131) Part Number

<u>Resistors</u>			
R100	100Ω	1/2W	20%
R101	47kΩ	1/2W	5% Low Noise
R102	2.2MΩ	1/2W	20%
R103	10kΩ	1/2W	10%
R104	470kΩ	1/2W	10%
R105	68Ω	1/2W	5%
R106	470Ω	1/2W	10%
R107	1.8kΩ	1/2W	5%
R108	39kΩ	1/2W	5%
R109	39kΩ	1/2W	10%
R110	10kΩ	1/2W	20%
R111	100kΩ	1/2W	10%
R112	2.2MΩ	1/2W	20%
R113	3.3kΩ	1/2W	5%
R114	2.2kΩ	1/2W	5%
R115	82kΩ	1/2W	10%
R116	8.2kΩ	1/2W	10%
R117	220kΩ	1/2W	20%
R118	100kΩ	1/2W	20%
R119	47kΩ	1/2W	5% Low Noise
R120	2.2MΩ	1/2W	20%
R121	10kΩ	1/2W	10%
R122	470kΩ	1/2W	10%
R123	68Ω	1/2W	5%
R124	470Ω	1/2W	10%
R125	1.8kΩ	1/2W	5%
R126	39kΩ	1/2W	5%
R127	39kΩ	1/2W	10%
R128	10kΩ	1/2W	20%
R129	100kΩ	1/2W	10%
R130	2.2MΩ	1/2W	20%
R131	3.3kΩ	1/2W	5%
R132	2.2kΩ	1/2W	5%
R133	82kΩ	1/2W	10%
R134	8.2kΩ	1/2W	10%
R135	220kΩ	1/2W	20%
R136	1kΩ	1/2W	10%
R137	1kΩ	1/2W	10%
<u>Capacitors</u>			
C100	25μF	25V	Electrolytic
C101	0.22μF	250V	10%
C102	5μF	64V	Electrolytic
C103	.047μF	250V	10%
C104	0.15μF	250V	10%

PARTS LISTS

Cct. Ref. 100 PRE-AMPLIFIER BOARD (Assembly 025-131) Part Number

Capacitors

C105	0.22μF	250V	10%	131-508
C106	0.1μF	250V	20%	131-507
C107	100μF	40V	Electrolytic	130-001
C108	5μF	64V	Electrolytic	130-007
C109	25μF	25V	Electrolytic	130-016
C110	0.22μF	250V	10%	131-508
C111	5μF	64V	Electrolytic	130-007
C112	.047μF	250V	10%	131-506
C113	0.15μF	250V	10%	131-502
C114	0.22μF	250V	10%	131-508
C115	0.1μF	250V	20%	131-507
C116	100μF	40V	Electrolytic	130-001
C117	5μF	64V	Electrolytic	130-007
C118	1000pF	160V	10%	131-766
C119	1000pF	160V	10%	131-766

Miscellaneous

VT100	Transistor BC154 (or BC214LB)	825-007
VT101	Transistor BC154 (or BC214LB)	825-007
VT102	F.E. Transistor 2N5461 (or BC219B)	325-017
VT103	Transistor BC154 (or BC214LB)	825-007
VT104	Transistor BC154 (or BC214LB)	325-007
VT105	F.E. Transistor 2N5461 (or BC219B)	825-017
MR100	Diode BAX 16 (or OA 200)	290-001
MR101	Diode BAX 16 (or OA 200)	290-001

Cct. Ref. 200 MODE SWITCHING BOARD (Assembly 025-132) Part Number

Resistors

R200	27kΩ	½W	10%	625-13-27k
R201	27kΩ	½W	10%	625-13-27k

Miscellaneous

SW200	Mode Selector Switch (push button)	749-001
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For Service Manuals  
**MAURITRON SERVICES**  
 8 Cherry Tree Road, Chinnor  
 Oxfordshire, OX9 4QY.  
 Tel (01844) 351694  
 Fax (01844) 352554  
 email:- sales@mauritron.co.uk

PARTS LISTS

Cct. Ref. 300 FILTER BOARD (Assembly 025-133) Part Number

<u>Capacitors</u>			
C300	1,000pF	125V	10%
C301	.0047μF	250V	10%
C302	.0047μF	250V	10%
C303	.0068μF	250V	10%
C304	1,300pF	125V	10%
C305	.0047μF	250V	10%
C306	.0047μF	250V	10%
C307	.0068μF	250V	10%
<u>Miscellaneous</u>			
SW300	Filter Switch (push button)		749-001

Cct. Ref. 400 TONE & GAIN CONTROL BOARD (Assy 025-134) Part Number

<u>Resistors</u>			
R400	2.7kΩ	½W	5%
R401	10kΩ	½W	10%
R402	470kΩ	½W	20%
R403	2.7kΩ	½W	5%
R404	2.2kΩ	½W	10%
R405	470kΩ	½W	20%
R406	27kΩ	½W	20%
R407	1kΩ	½W	10%
R408	100kΩ	½W	10%
R409	270kΩ	½W	10%
R410	1MΩ	½W	10%
R411	22kΩ	½W	10%
R412	2.7kΩ	½W	5%
R413	10kΩ	½W	10%
R414	470kΩ	½W	20%
R415	2.7kΩ	½W	5%
R416	2.2kΩ	½W	10%
R417	470kΩ	½W	20%
R418	27kΩ	½W	20%
R419	1kΩ	½W	10%
R420	100kΩ	½W	10%
R421	270kΩ	½W	10%
R422	1MΩ	½W	10%
R423	22kΩ	½W	10%
<u>Capacitors</u>			
C400	0.15μF	250V	10%
C401	0.15μF	250V	10%
C402	160μF	25V	Electrolytic
C403	.0068μF	250V	10%
C404	5μF	64V	Electrolytic

PARTS LISTS

Cct. Ref. 400 TONE & GAIN CONTROL BOARD (assy 025-134) Part Number

<u>Capacitors (contd)</u>				
C405	0.1 $\mu$ F	250V	20%	131-507
C406	100 $\mu$ F	40V	Electrolytic	130-001
C407	1 $\mu$ F	250V	10%	131-503
C408	25 $\mu$ F	25V	Electrolytic	130-016
C409	0.15 $\mu$ F	250V	10%	131-502
C410	0.15 $\mu$ F	250V	10%	131-502
C411	160 $\mu$ F	25V	Electrolytic	130-011
C412	.0068 $\mu$ F	250V	10%	131-504
C413	5 $\mu$ F	64V	Electrolytic	130-007
C414	0.1 $\mu$ F	250V	20%	131-507
C415	100 $\mu$ F	40V	Electrolytic	130-001
C416	1 $\mu$ F	250V	10%	131-503
C417	25 $\mu$ F	25V	Electrolytic	130-016
<u>Miscellaneous</u>				
VT400	Transistor BC154 (or BC214LS)			825-007
VT401	Transistor BC154			825-007
VT402	Transistor BC154 (or BC214LS)			825-007
VT403	Transistor BC154			825-007

Cct. Ref. 500 POWER AMPLIFIER BOARD (Assembly 025-135) Part Number

<u>Resistors(R) &amp; Potentiometers(RV)</u>				
R500	0.35 $\Omega$	1W	Wire-wound	626-005
R501	0.35 $\Omega$	1W	Wire-wound	625-005
R502	270 $\Omega$	$\frac{1}{2}$ W	5%	625-12-270
R503	270 $\Omega$	$\frac{1}{2}$ W	5%	625-12-270
R504	2.2 $\Omega$	$\frac{1}{2}$ W	$\pm\frac{1}{2}\Omega$	625-14-2D2
R505	4.7k $\Omega$	$\frac{1}{2}$ W	10%	625-13-4k7
R506	160 $\Omega$	$\frac{1}{2}$ W	20%	624-008
R507	470 $\Omega$	$\frac{1}{2}$ W	10%	625-13-470
R508	1k $\Omega$	$\frac{1}{2}$ W	10%	625-13-1k
R509	39k $\Omega$	$\frac{1}{2}$ W	5%	625-12-39k
R510	4.7k $\Omega$	$\frac{1}{2}$ W	10%	625-13-4k7
R511	10k $\Omega$	$\frac{1}{2}$ W	10%	625-13-10k
R512	10k $\Omega$	$\frac{1}{2}$ W	10%	625-13-8k2
R513	8.2k $\Omega$	$\frac{1}{2}$ W	10%	625-13-8k2
R514	8.2k $\Omega$	$\frac{1}{2}$ W	10%	625-13-8k2
R515	82k $\Omega$	$\frac{1}{2}$ W	10%	625-13-32k
R516	22 $\Omega$	$\frac{1}{2}$ W	5%	625-12-22
R517	100k $\Omega$	$\frac{1}{2}$ W	10%	625-13-100k
RV518	500 $\Omega$	Linear		825-026
R519	22 $\Omega$	$\frac{1}{2}$ W	10%	625-07-22

PARTS LISTS

Cct. Ref. 500 POWER AMPLIFIER BOARD (Assembly 025-135) Part Number

<u>Capacitors</u>				
C500	250 $\mu$ F	40V	Electrolytic	130-003
C501	125 $\mu$ F	16V	Electrolytic	130-002
C502	32 $\mu$ F	40V	Electrolytic	130-013
C503	100 $\mu$ F	40V	Electrolytic	130-001
C504	350 $\mu$ F	160V	10%	131-763
C505	125 $\mu$ F	16V	Electrolytic	130-002
C506	125 $\mu$ F	16V	Electrolytic	130-002
<u>Miscellaneous</u>				
VT500	Transistor 16020	32		825-019
VT501	Transistor 40360			825-000
VT502	Transistor 16020			825-019
VT503	Transistor 40362			825-001
VT504	Transistor 40360			825-000
VT505	Transistor BC103LB (or BC106, 40233)			825-015
MR500	Diode 1N3754 (or SAX 16)			290-000
MR501	Diode 1N3754 (or SAX 16)			290-000

Cct. Ref. 600 POWER SUPPLY BOARD (Assembly 025-136) Part Number

<u>Resistors</u>				
R600	2.2k $\Omega$	1/2W	10%	625-13-2k2
R601	2.2k $\Omega$	1/2W	10%	625-13-2k2
R602	56 $\Omega$	3W	10%	626-015
R603	10 $\Omega$	1/2W	20%	625-14-10
R604	10 $\Omega$	1/2W	20%	625-14-10
R605	56 $\Omega$	3W	10%	626-015
<u>Capacitors</u>				
C600	250 $\mu$ F	64V	Electrolytic	130-010
C601	250 $\mu$ F	64V	Electrolytic	130-010
C602	250 $\mu$ F	64V	Electrolytic	130-010

Cct. Ref. 700 GENERAL Part Number

<u>Resistors (R) &amp; Potentiometers (RV)</u>				
R700	1k $\Omega$	0.5W	Wire-wound	626-006
R701	220k $\Omega$	1/2W	5%	625-06-22k
R702	100k $\Omega$	1/2W	5%	625-06-100k
R703	330k $\Omega$	1/2W	5%	625-06-330k
R704	2201 $\Omega$	1/2W	5%	625-06-220k

PARTS LISTS

Cct.  
Ref. 700 GENERAL

Part Number

<u>Resistors (R) &amp; Potentiometers (RV)</u>				
R705	100kΩ	½W	5%	625-06-100k
R706	330kΩ	½W	5%	625-06-330k
RV707	50kΩ	Linear (with RV712) "Treble"		582-014
RV708	50kΩ	Linear (with RV711) "Bass"		582-014
RV709	250kΩ	Logarithmic "Tape input left"		582-016
RV710	100kΩ	Logarithmic (with RV714) "Volume"		582-016
RV711	50kΩ	Linear (with RV703) "Bass"		582-014
RV712	50kΩ	Linear (with RV707) "Treble"		582-014
RV713	250kΩ	Logarithmic "Tape input right"		582-016
RV714	100kΩ	Logarithmic (with RV710) "Volume"		582-016
R715	0.35Ω	±.05Ω	Wire-wound	626-005
R716	0.35Ω	±.05Ω	Wire-wound	626-005
R717	100Ω	½W	10%	625-10-100
R718	100Ω	½W	10%	625-10-100
<u>Capacitors</u>				
C700	800μF	40V	Electrolytic	130-009
C701	800μF	40V	Electrolytic	130-009
C702	1000μF	70V	Electrolytic	130-014
C703	1000μF	70V	Electrolytic	130-014
C704	.022μF	250V	10%	131-505
C705	.022μF	250V	10%	131-505
C706	1000pF	160V	10%	131-766
C707	1000pF	160V	10%	131-766
<u>Miscellaneous</u>				
SW700	Mains Switch			750-004
SW701	Input Switch			750-005
SW702	Magnetic P. U. Switch			746-000
SW703	Output Switch			746-003
SW704	Speaker Switch			746-003
L700	Inductor (Type 727)			022-073
L701	Inductor (Type 727)			022-073
TR700	Mains Transformer (T1703)			022-105
MR700	Bridge Rectifier WO2 (or WC4, CSH01-200)			600-002
MR701	Bridge Rectifier WO2 (or WC4, CSH01-200)			600-002
JK700	Jack Socket, 3 way (Gauge A)			692-010
P700	Plug, 3 way (Mains input)			577-000

PARTS LISTS

Cct. Ref.	700   GENERAL	Part Number
<u>Miscellaneous</u>		
SK700	Socket, 2 x 2 way (Mains outlets)	692-005
SK701	D. I. N. Socket, 2 way (Left Speaker)	692-009
SK702	D. I. N. Socket, 2 way (Right Speaker)	692-009
SK703	Phono Sockets (Yellow) "Left"	692-007
SK704	Phono Sockets (Blue) "Right"	692-006
SK705	Phono Sockets (Yellow-Blue) "Tape"	692-008
VS700	Voltage Selector	920-001
LP700	Lamp, LES 14V	455-002
FS700	Mains Fuse (1.5 Amp - 20 mm x 5 mm dia.)	380-004
FS701	D. C. Fuse (0.75 Amp - 20 mm x 5 mm dia.)	380-006
FS702	D. C. Fuse (0.75 Amp - 20 mm x 5 mm dia.)	380-003
	Mains Fuse Holder	380-005
	D. C. Fuse Holder	380-001

## D. C. VOLTAGE READINGS

The following 'typical' readings were taken with respect to chassis under no signal conditions using an Avometer Model 8 on the 100V or 10V range. These readings are average values and intended as a guide only; due to component tolerances, variations from these may be observed in an amplifier which is performing satisfactorily. However, it is hoped that these figures will assist in locating the fault on a defective amplifier.

<u>CHANNEL</u>	<u>Left</u>	<u>Right</u>	<u>*Emitter</u>	<u>*Collector</u>
<b>Pre-amplifier Board</b>				
	VT100	VT103	-3	
	VT101	VT104	-1.6	-8
	*VT102	*VT105	-13	-25
<b>Tone &amp; Gain Control Board</b>				
	VT400	VT402	.0	-4
	VT401	VT403	-30	-44
<b>Power Amplifier Board</b>				
	VT500	VT500	+32	+65
	VT501	VT501	+30	+65
	VT502	VT502	0	+32
	VT503	VT503	+30	+0.5
	VT504	VT504	+2.5	+30
	VT505	VT505	+0.5	+3.5
<u>JUNCTION</u>		<u>LINE VOLTAGE</u>		
FS701 & FS702		+65		
R513/R514		+35		
R600/C600		-42		
R601/C602		-42		
R100/R101		-16		
R406/C402		-14		

\* F.E.T. - source & drain

## REPLACEMENT PARTS

		<u>Part Number</u>
<u>Knobs</u>		
Volume, Bass & Treble - Upper		025-053
Lower		448-006
Felt washer		922-013
Input	Upper	025-059
	Lower	448-011
Ch/OFF		025-063
<u>Labels</u>		
Left		450-009A
Right		450-009B
Centre		450-009C
Flap		450-013
Mains Fuse Holder (Red)		300-005
D.C. Fuse Holder (Black)		330-001
Front Panel		573-036
Hinged Flap		215-006
Rear Panel		573-054
	SEMKO Models	573-156
Case Feet		332-005
Earth Terminal Nut (rear panel)		6P/2025/N

## ACCESSORIES

The following accessories are available for use with the F307 Amplifier.

Phono Plug (Blue)	577-004
Phono Plug (Yellow)	577-005
D. I. N. Plug (Speaker)	577-003
Jack Plug, Gauge A (Phones)	577-011
Mains Outlet Plug (2 pin)	577-012
Mains Input Socket (3 pin)	692-000
Mains Input Socket (3 pin) with lead	573-001
Fuse (0.75 Amp. 20 mm x 5 mm dia.)	380-008
Fuse (1 Amp. 20 mm x 5 mm dia.)	300-000
Fuse (1.5 Amp. 20 mm x 5 mm dia.)	380-004
Lamp Bulb LES 14V	455-002

Due to constant efforts to improve performance and consequent modifications, it may be found that minor differences exist between the actual instrument and that described in this manual. It is therefore essential to quote the serial number of the amplifier when ordering any replacement components.

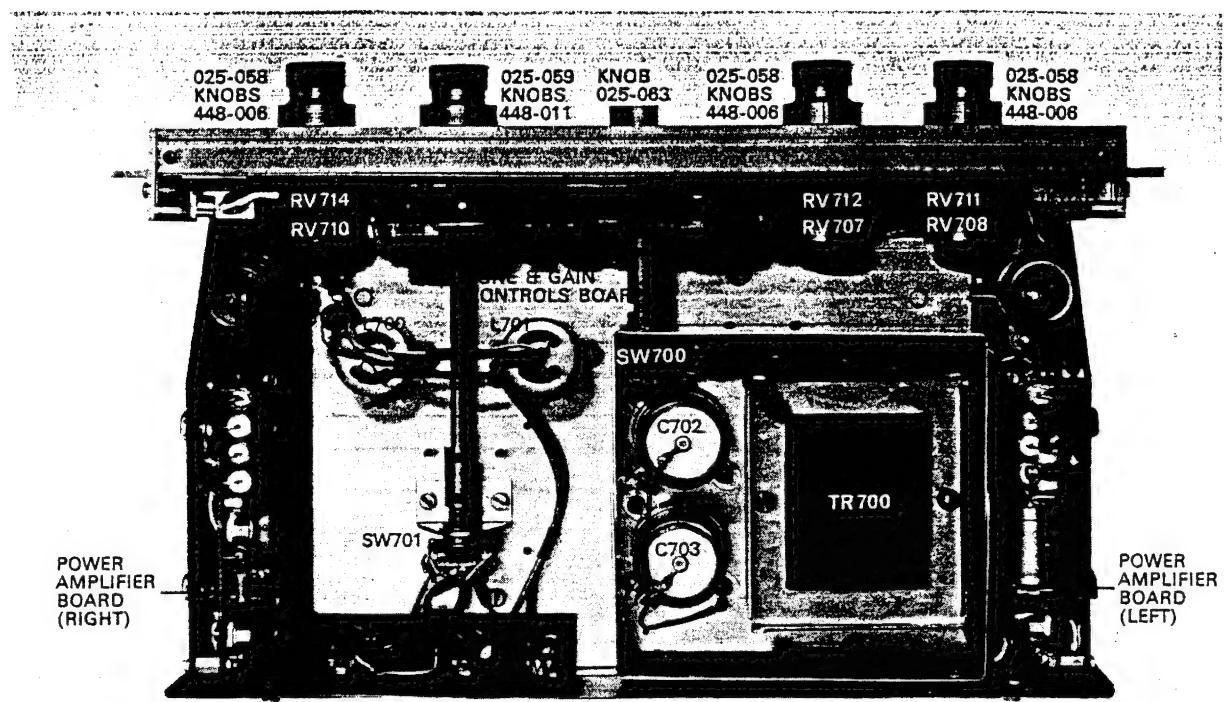


FIG. 8a. AMPLIFIER CHASSIS — TOP VIEW

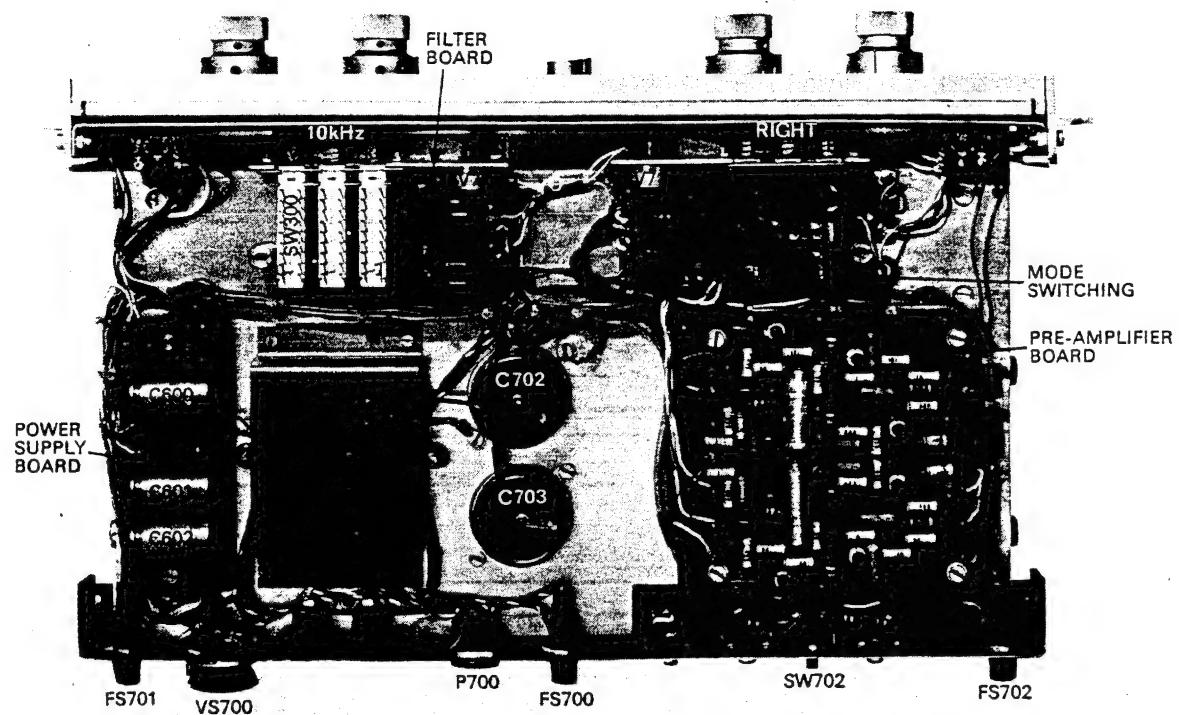


FIG. 8b. AMPLIFIER CHASSIS — UNDERSIDE VIEW

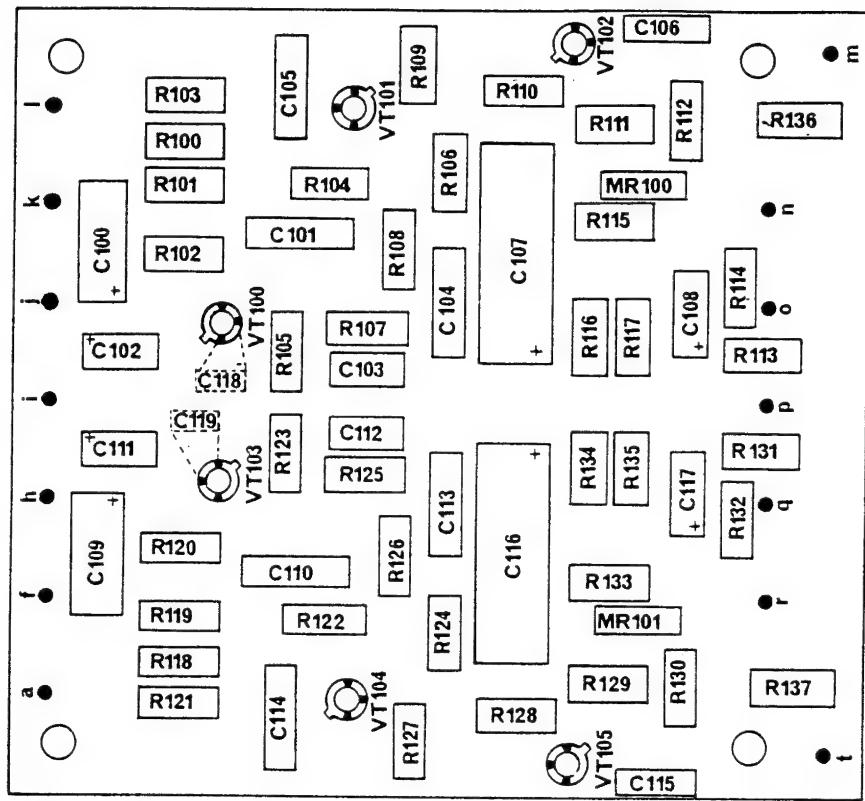


FIG. 9. PRE-AMPLIFIER BOARD  
(025-131)

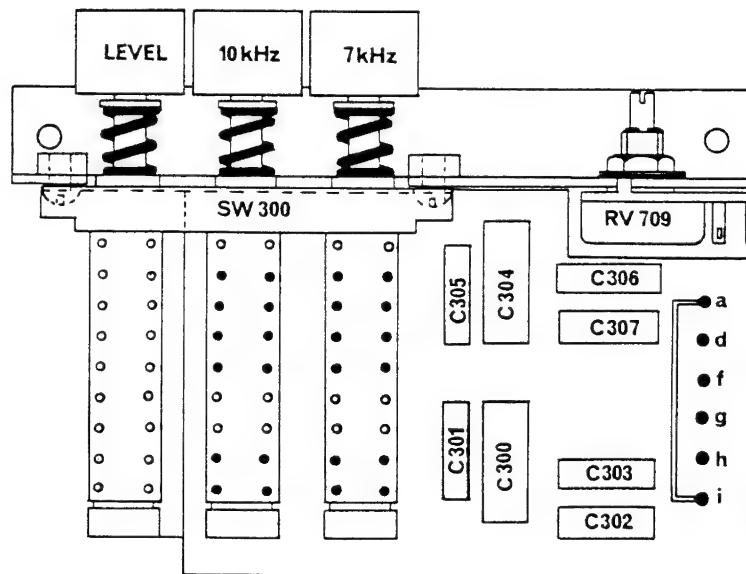


FIG. 10. FILTER BOARD  
(025-133)

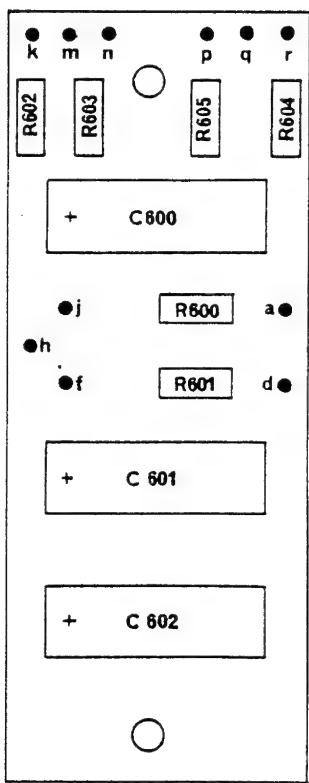


FIG. 11. POWER SUPPLY BOARD  
(025-136)

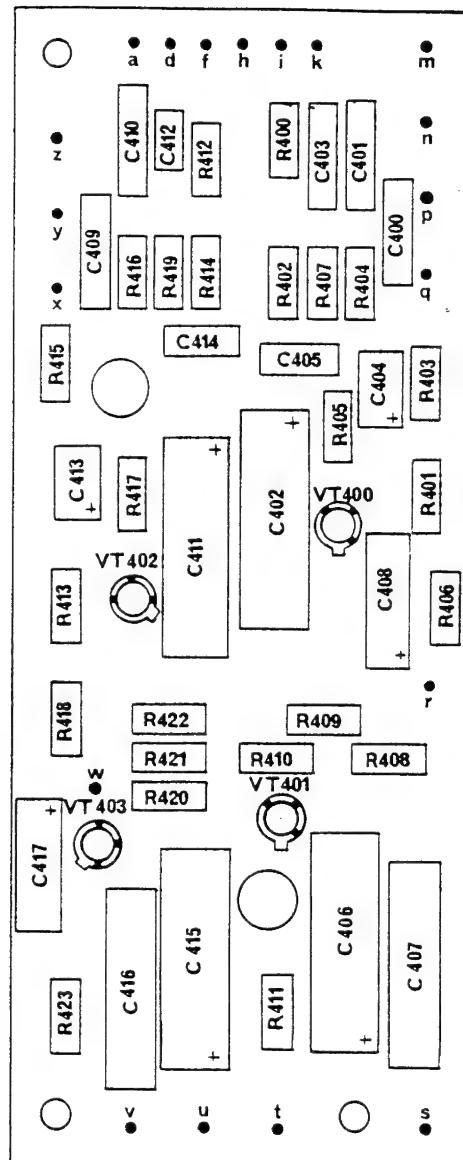


FIG. 12. TONE AND GAIN CONTROL BOARD  
(025-134)

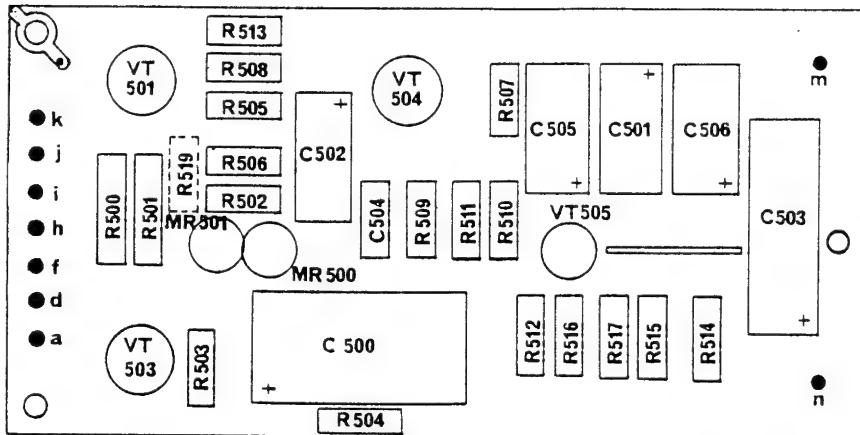
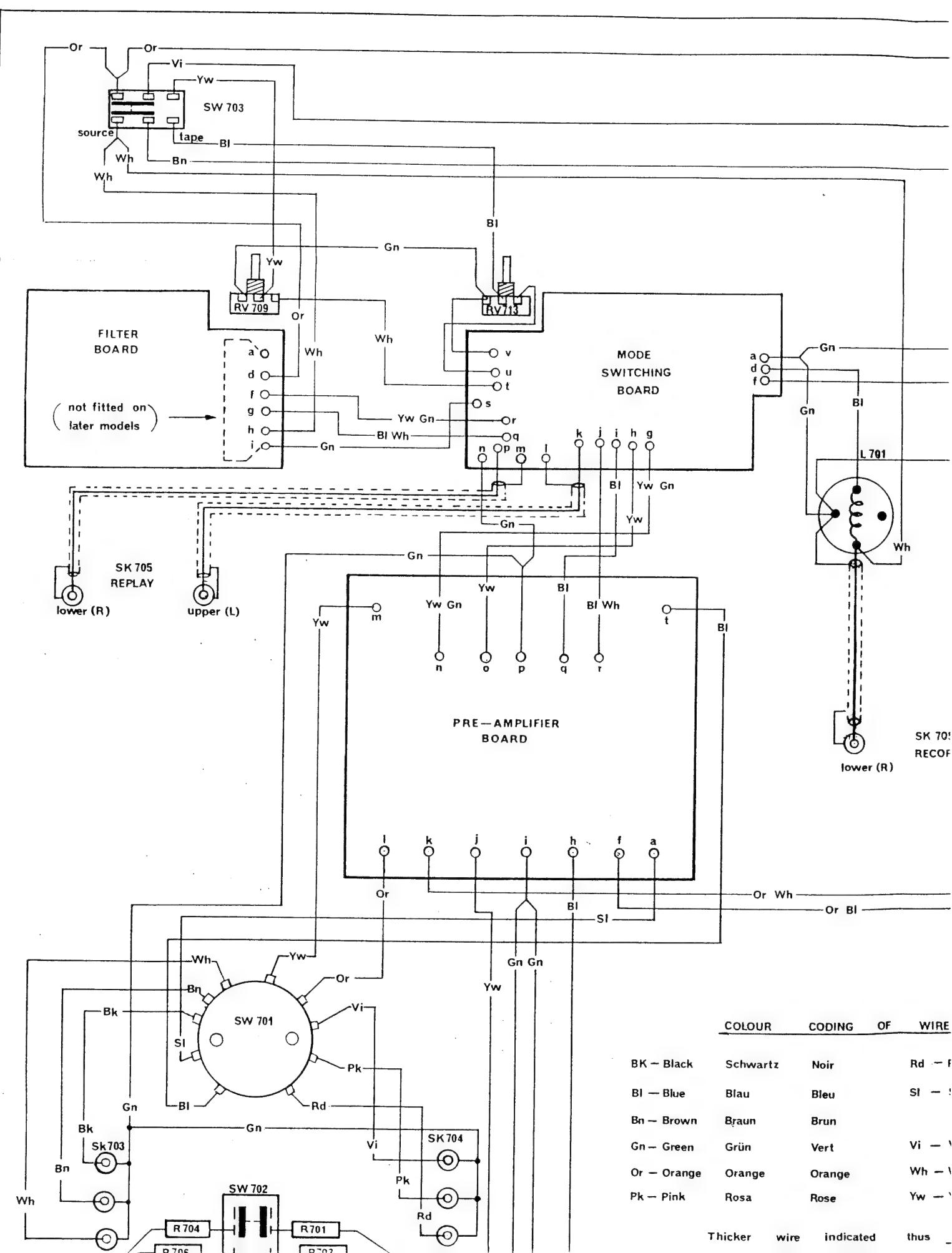


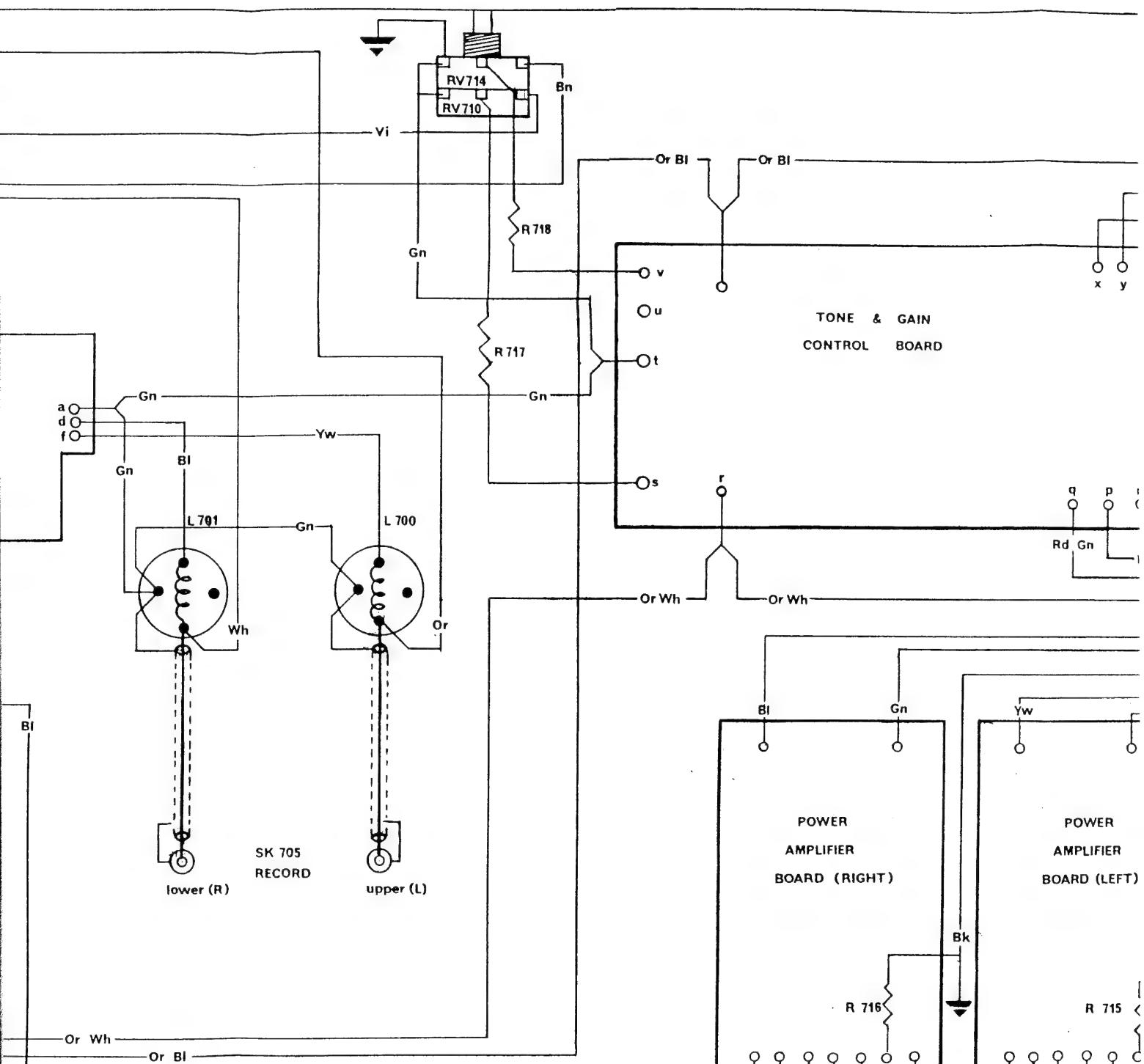
FIG. 13. POWER AMPLIFIER BOARD  
(025-135)

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email:- sales@mauritron.co.uk



COLOUR	CODING	OF	WIRE
Schwartz	Noir	Rd	- R
Blau	Bleu	Sl	- S
Braun	Brun		
Grün	Vert	Vi	- V
Orange	Orange	Wh	- W
Rosa	Rose	Yw	- Y

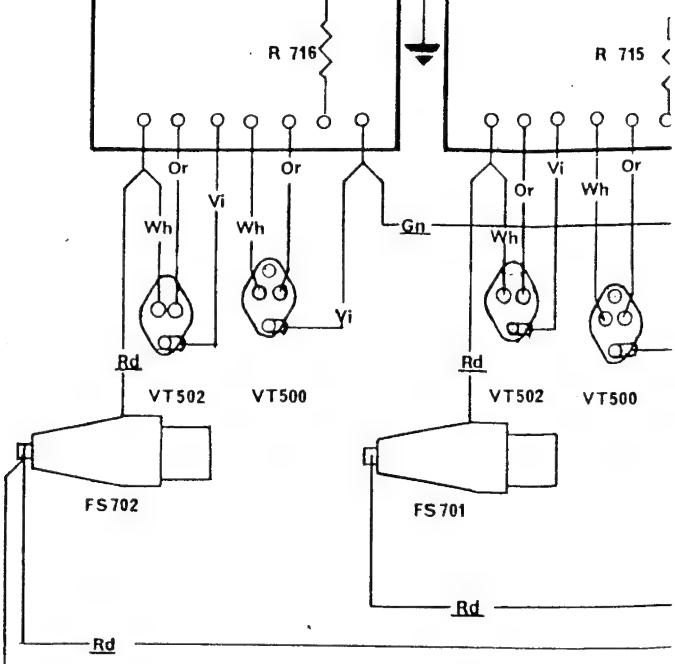
Thicker wire indicated thus

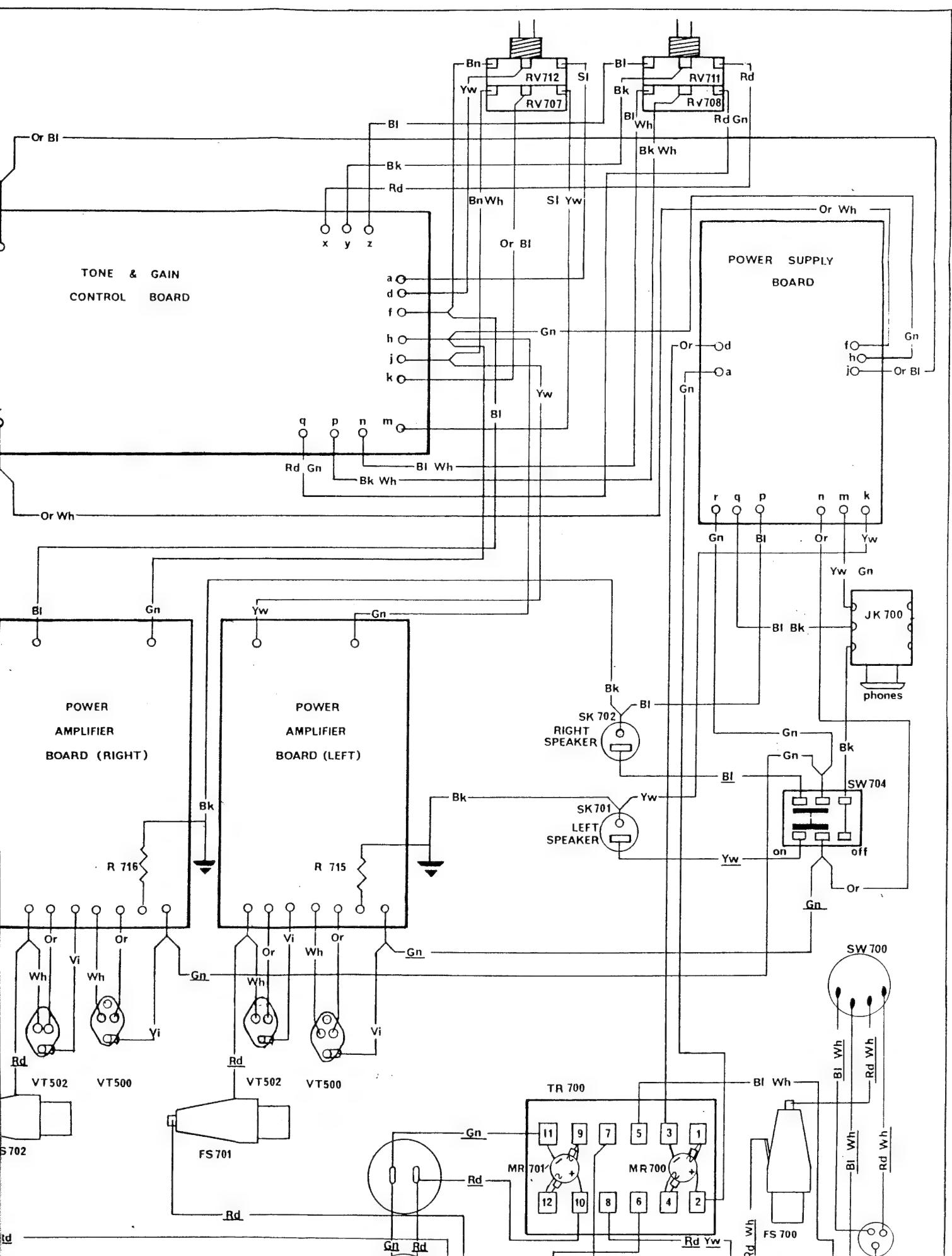


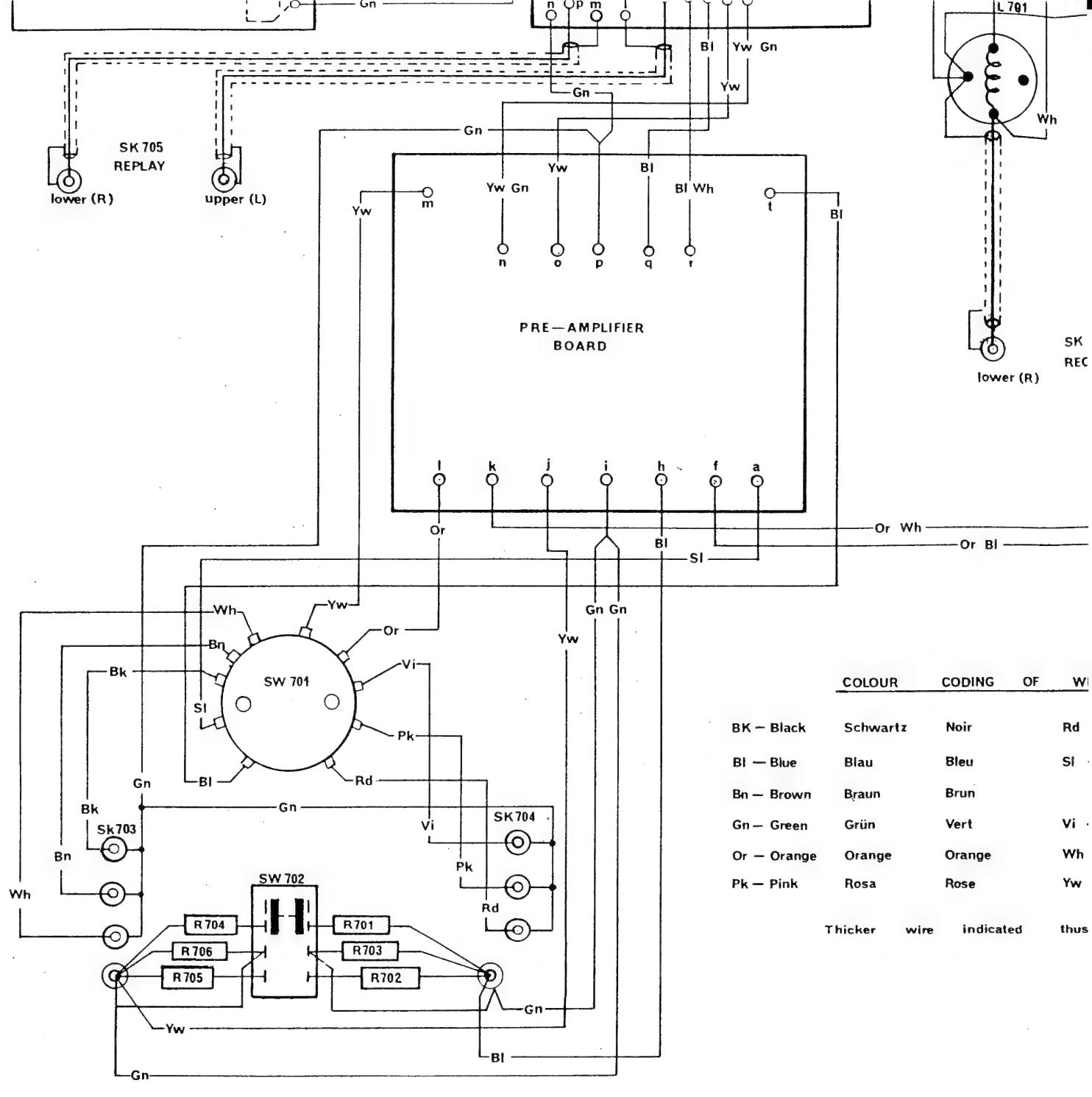
COLOUR CODING OF WIRES

Schwarz	Noir	Rd — Red	Rot	Rouge
Blau	Bleu	Sl — Slate Grey	Grau	Gris
Braun	Brun			
Grün	Vert	Vi — Violet	Violett	Violet
Orange	Orange	Wh — White	Weiss	Blanc
Rosa	Rose	Yw — Yellow	Gelb	Jaune

Thicker wire indicated thus BI Wh







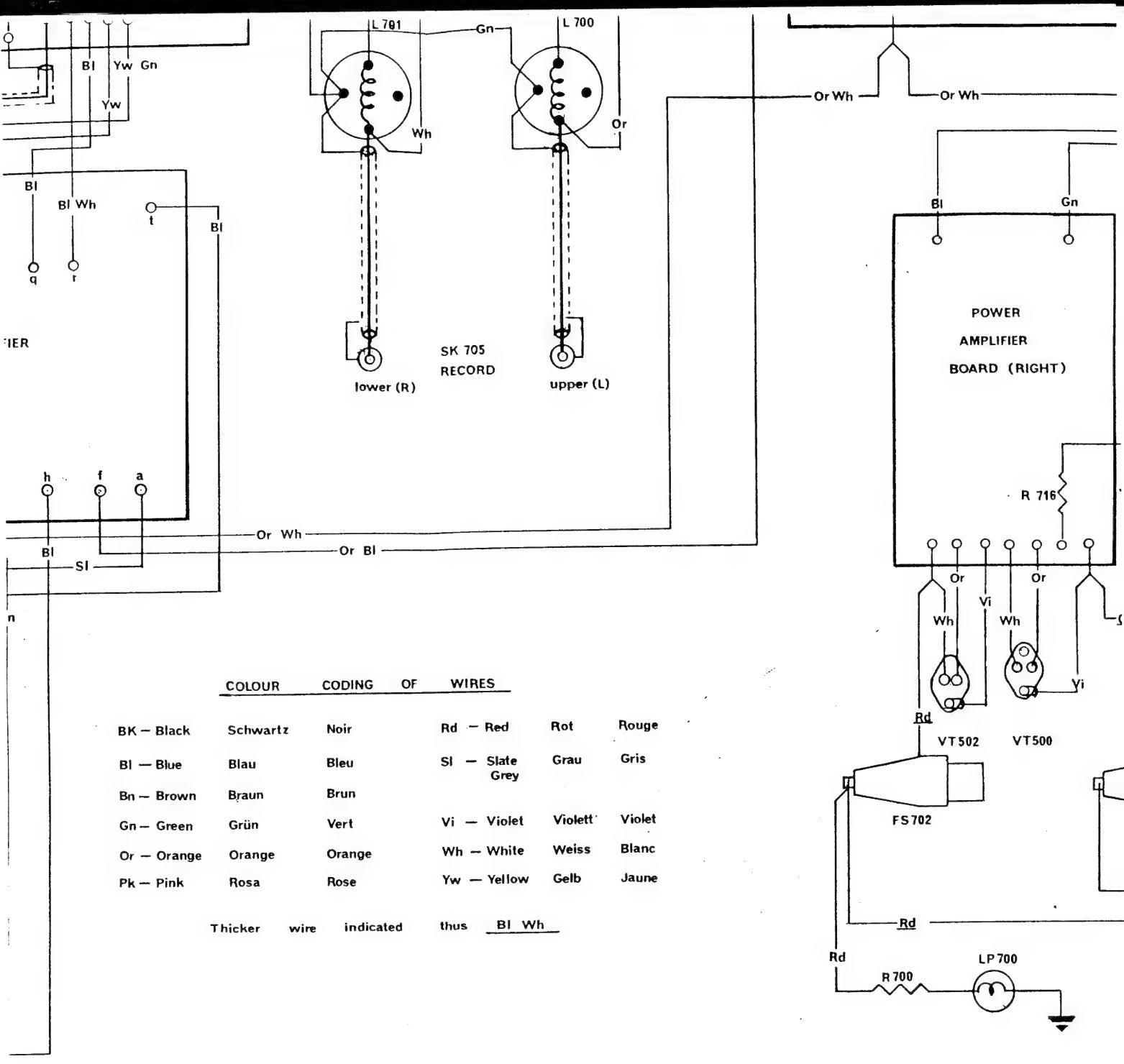
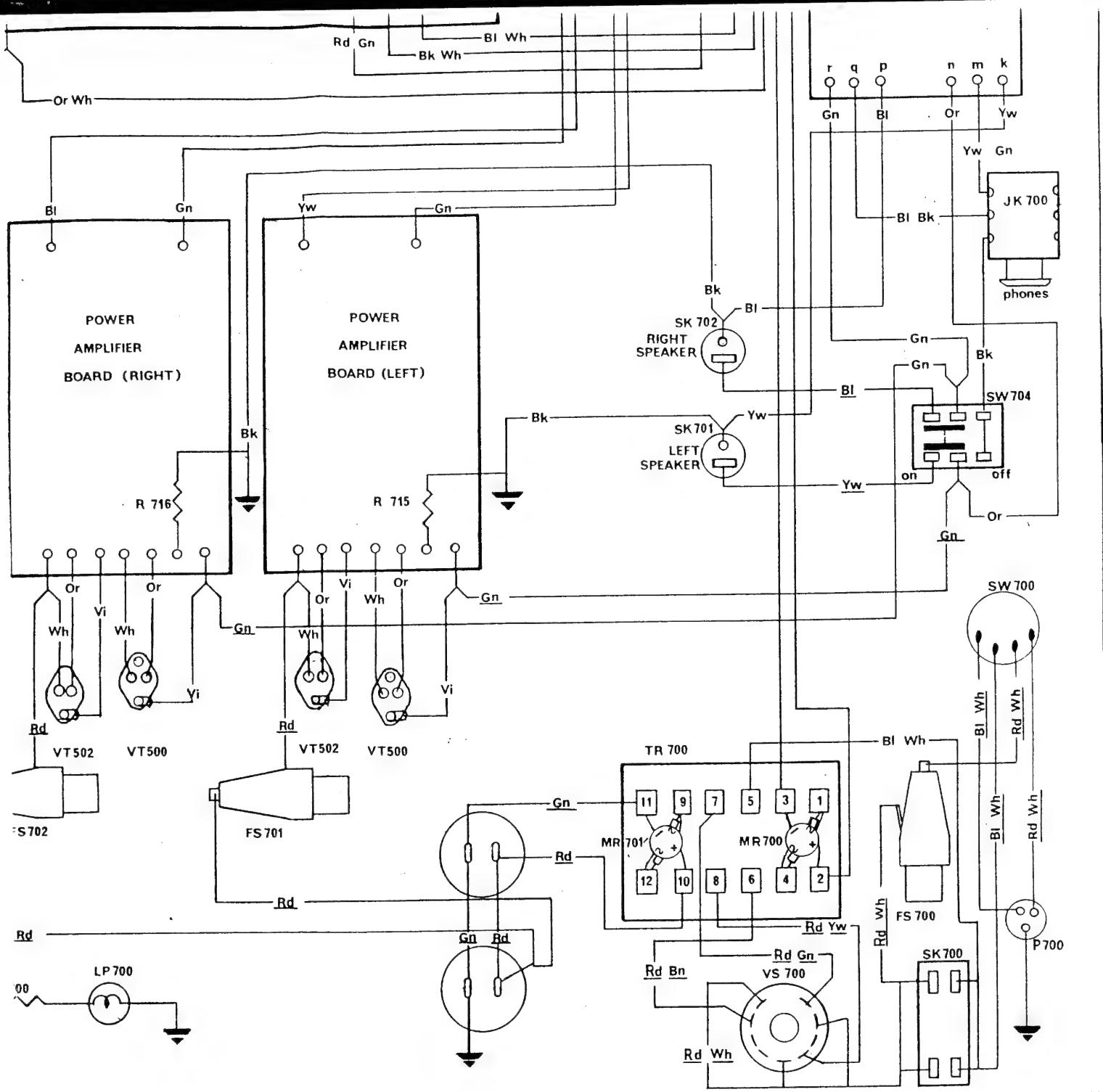


FIG. 14. WIRING DIAGRAM



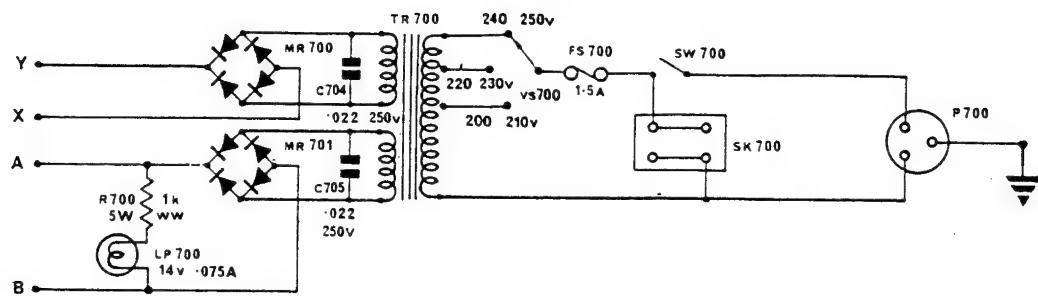


FIG. 16a. CIRCUIT DIAGRAM DETAIL (prior to Serial No. A1000)

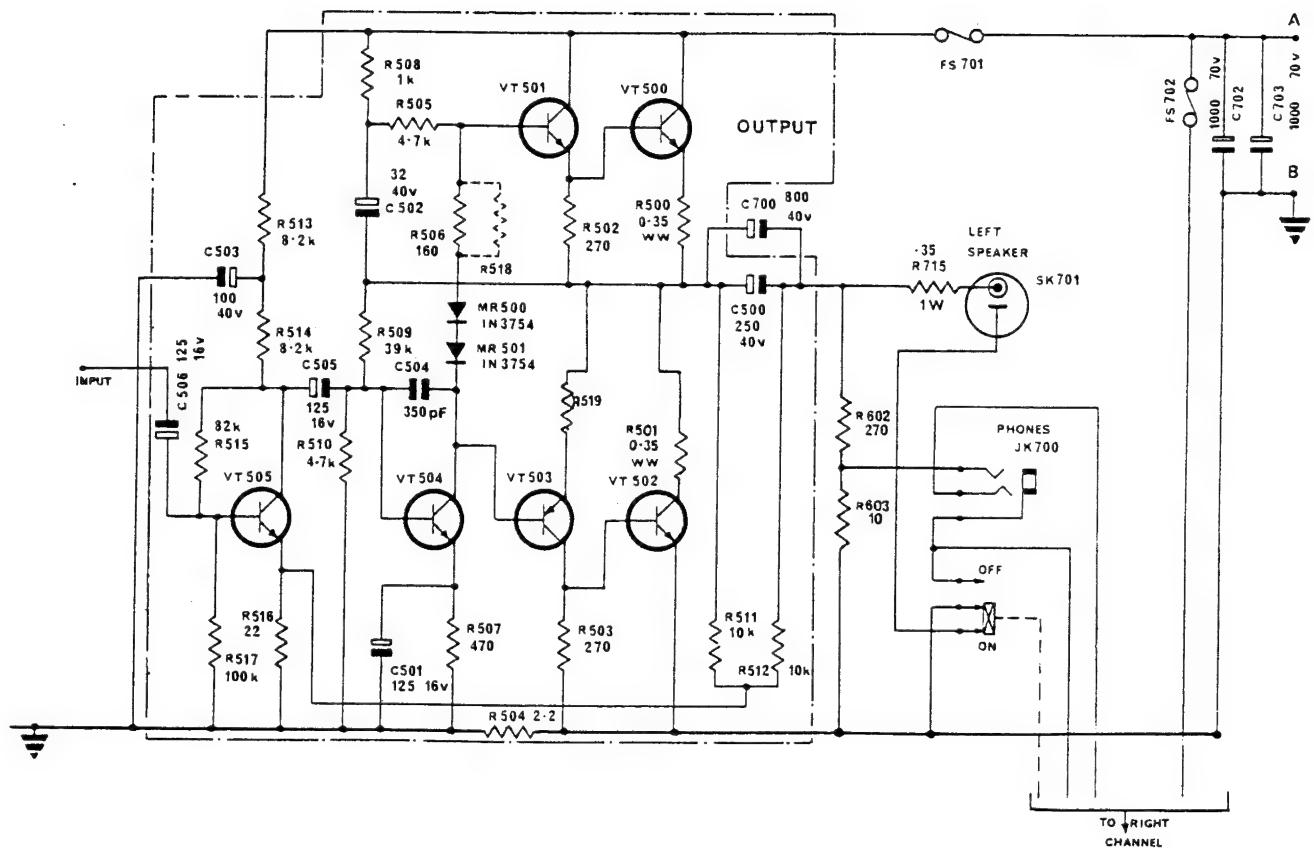


FIG. 16b. CIRCUIT DIAGRAM DETAIL (prior to Serial No. A2000)

# FERROGRAPH

## SERVICE BULLETIN

Date February 1974

### Series 7 Tape Recorders

#### Servicing of the Tape Drive System

N.B. Please note that component numbers quoted in this bulletin refer to the tape deck exploded diagram (fig. 1) in the Series 7 Service Manual 500-010 and Maintenance Manual 500-016.

We have received reports of failure of the capstan to rotate in the "pause" or "run" modes, or slowing down of the capstan after it has been rotating for a short period.

This is invariably caused by one of the idler wheels failing to engage (or dropping out of engagement) with the capstan motor pulley and/or flywheel, and it can arise for the following reasons.

- (1) Customer attempting to change tape speed with the deck function switch in the "fast wind", "pause" or "run" modes.
- (2) The idler wheel arm (35A, B or C) jamming in its slotted brackets.
- (3) Incorrect adjustment of the speed selector spring attached to the start solenoid armature (58B).

(1) Where such a failure is reported by your customer but cannot be reproduced in your Service Department with the recorder operated both horizontally and vertically, the problem may be produced by the customer's not returning the deck function knob to the "Stop" position before changing speed. This will result in the autostop circuit being energised thus shutting down the deck and causing the speed selector spring (58B) to move out of the idler arm slot (35A, B or C).

On subsequently selecting the correct tape speed, the speed selector spring (58B) may not be able to engage with the slot of the appropriate idler wheel arm, thus the idler wheel will not pull into engagement with the motor pulley and flywheel. This malfunction can usually be cured by moving the speed change knob (55B) through all speed positions before selecting the desired speed (Function switch at "Stop").

THE FERROGRAPH COMPANY LTD  
TECHNICAL SERVICE DEPARTMENT  
SIMONSONE WORKS  
SOUTH SHIELDS  
CO. DURHAM, NE34 9NX

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TELEPHONE SOUTH SHIELDS 089-43 2301  
TELEGRAMS BRITFERRO SOUTH SHIELDS TELEX 537227

(2) Jamming of one or more of the idler wheel arms (35A, B or C) could occur if the recorder has received a slight mechanical shock, e.g. in transit, such that the slotted support brackets (37A or B) are not at right angles (approximately) to the run of the idler wheel arms. Releasing the bracket screws and resetting the bracket usually effects a cure. It is also worthwhile examining the thin sides of the idler wheel arms for burrs (rough protrusions) which may prevent the arms from riding freely in their slotted brackets. Any burrs should be gently removed using a small file.

(3) Incorrect adjustment or tension on the speed selector spring (58B) may prevent the idler wheel arm from engaging or result in the idler wheel disengaging from the motor pulley/flywheel. This can usually be cured by undertaking one or more of the adjustments outlined on page 52 (para 405) of the Series 7 Recorder Service Manual (500-010) or Maintenance Manual (500-016).

Should a fault of this nature occur at only the highest tape speed the speed selector spring (58B) may be chafing the deck plate and in this instance it will probably be necessary to adjust the height of the speed change cam (63B). However, adjustment of the cam must be carried out with care otherwise the speed selector spring (58B) may not align itself in each idler wheel arm slot.

---

B. CAROLINE  
Service Manager

# FERROGRAPH

## SERVICE BULLETIN

Date February 1974

### Series 7 Tape Recorders

(After Ser. No. approx. 86000)

Owing to temporary shortage of  $15\Omega \frac{1}{2}$  watt carbon resistors it was found necessary to use  $15\Omega \frac{1}{3}$  watt metal oxide components in slots R102, R104, R106 & R110. Due to the construction of the new resistors occasional failures may occur, resulting in loss of deck switch suppression at SW102, SW106, SW100-1b or SW100-1c.

Should it be necessary to replace any of the metal oxide resistors a  $15\Omega \frac{1}{2}$  watt standard carbon component must be used.

---

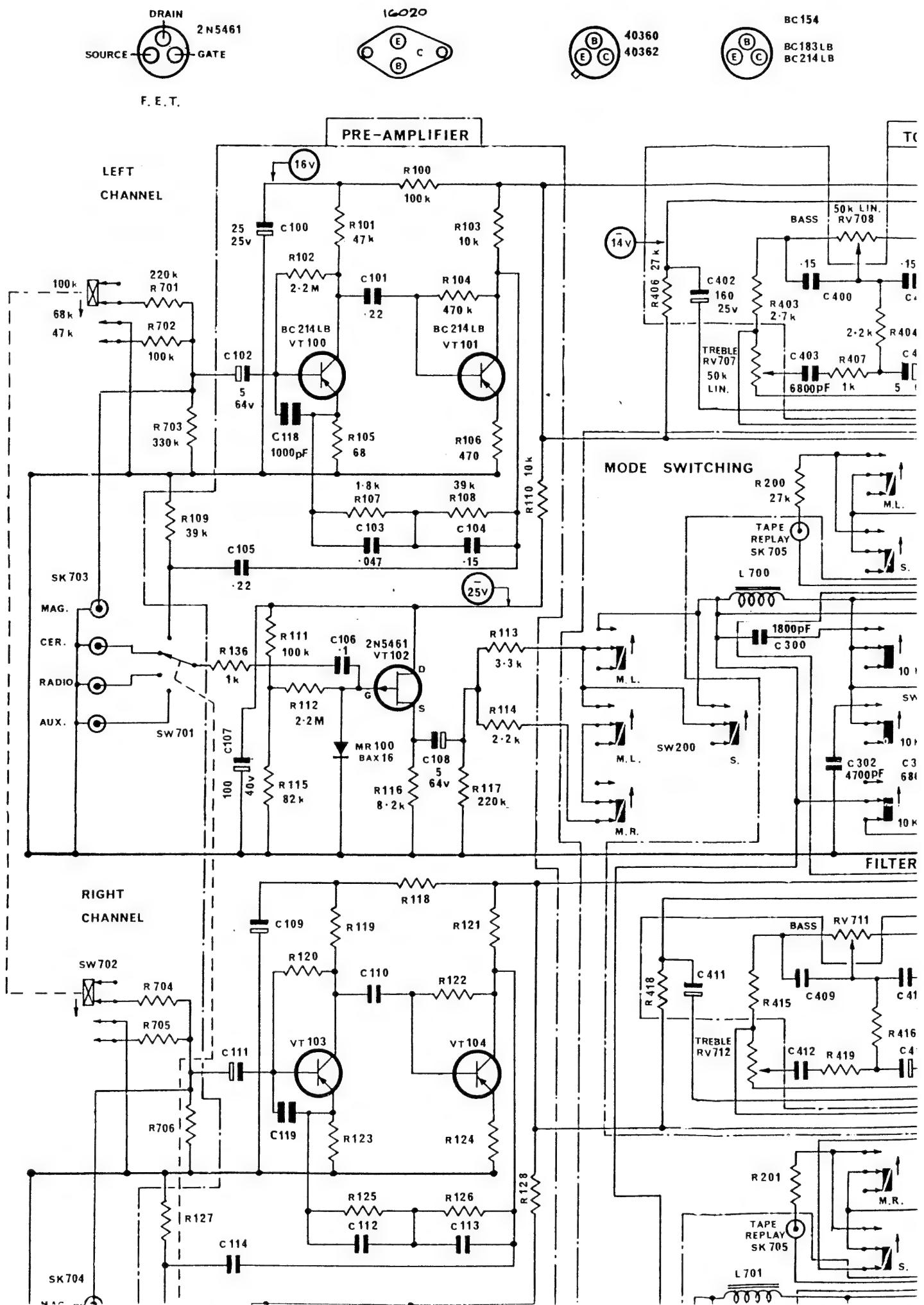
B. CAROLINE  
Service Manager

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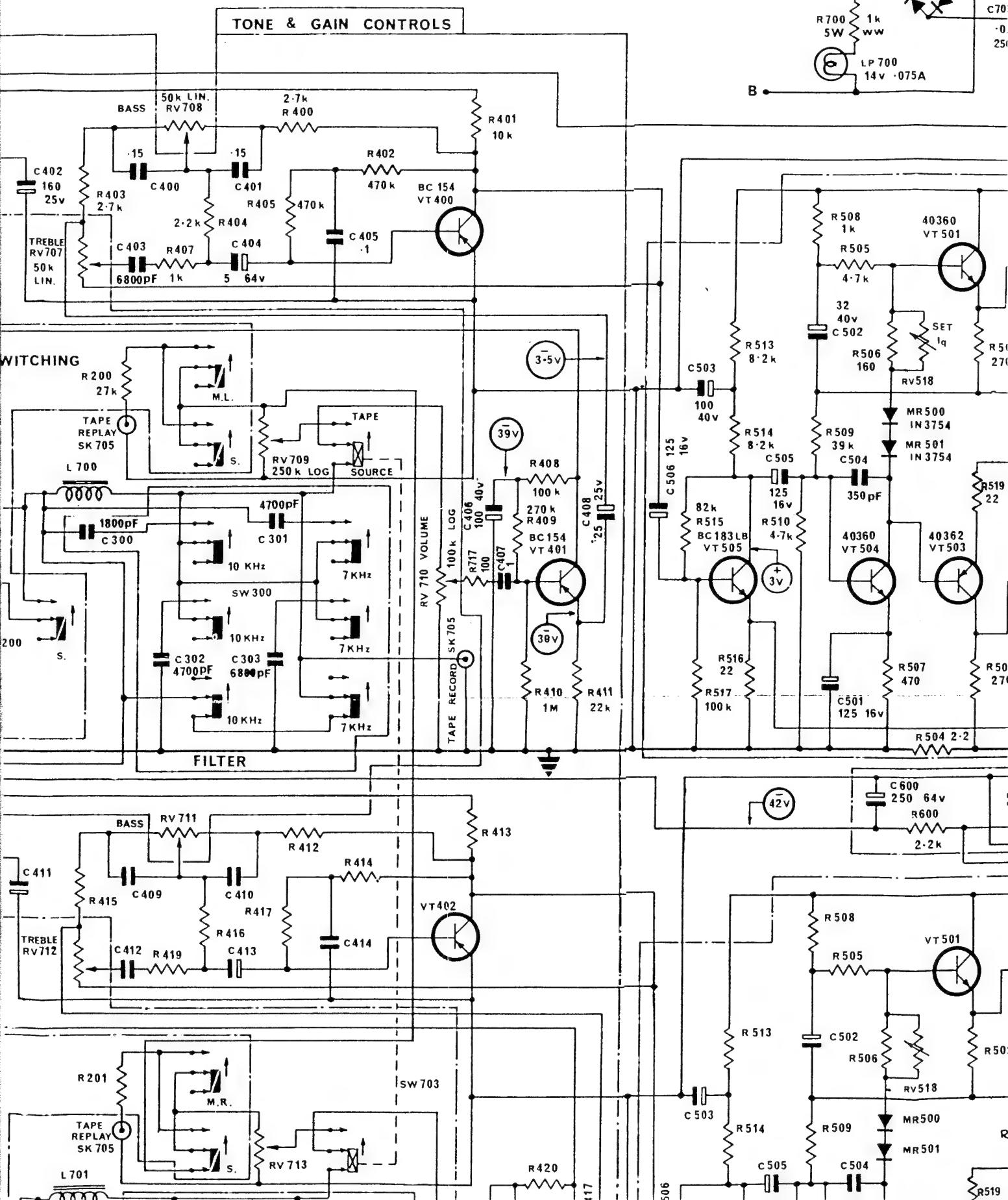
# FERROGRAPH



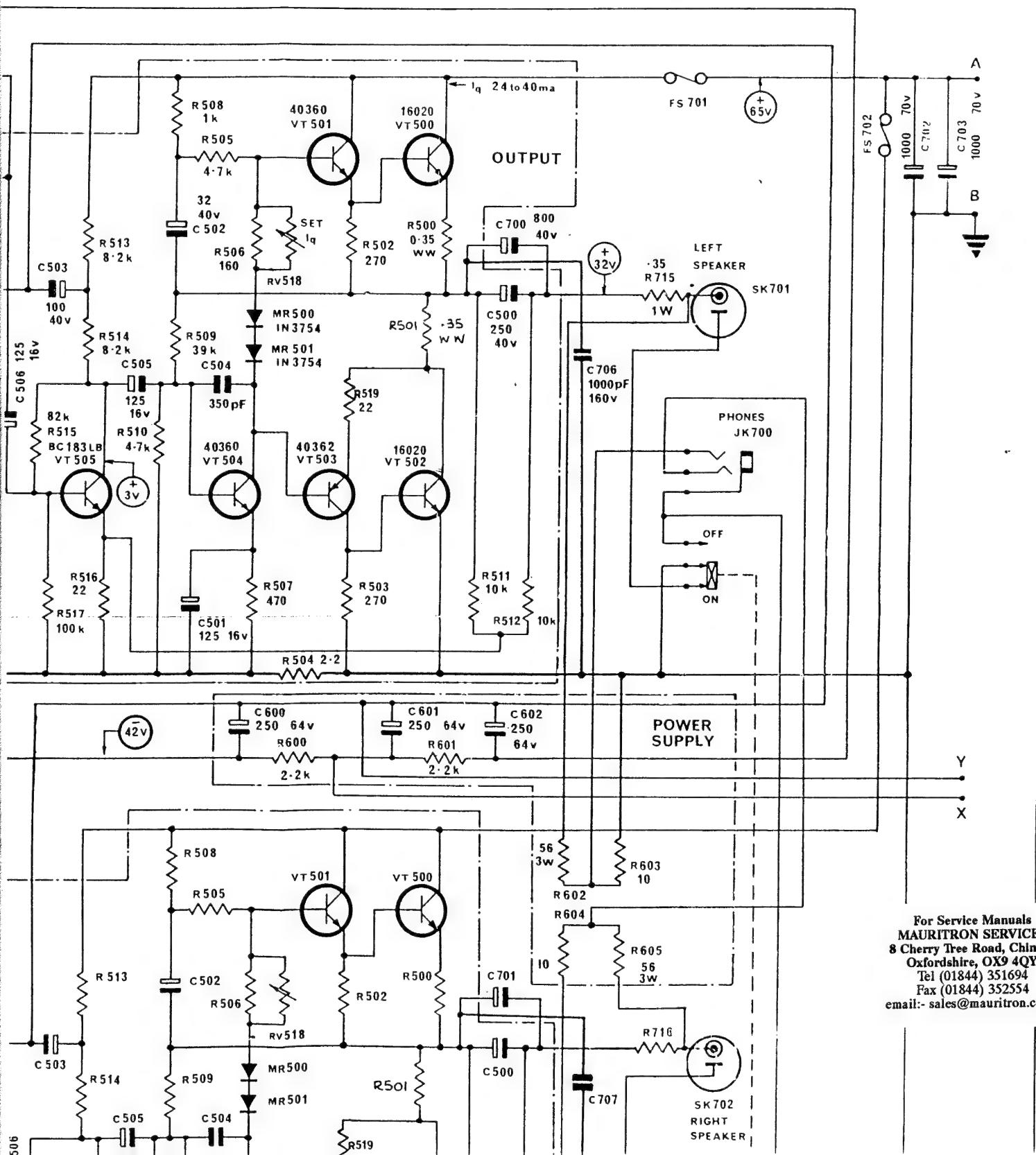
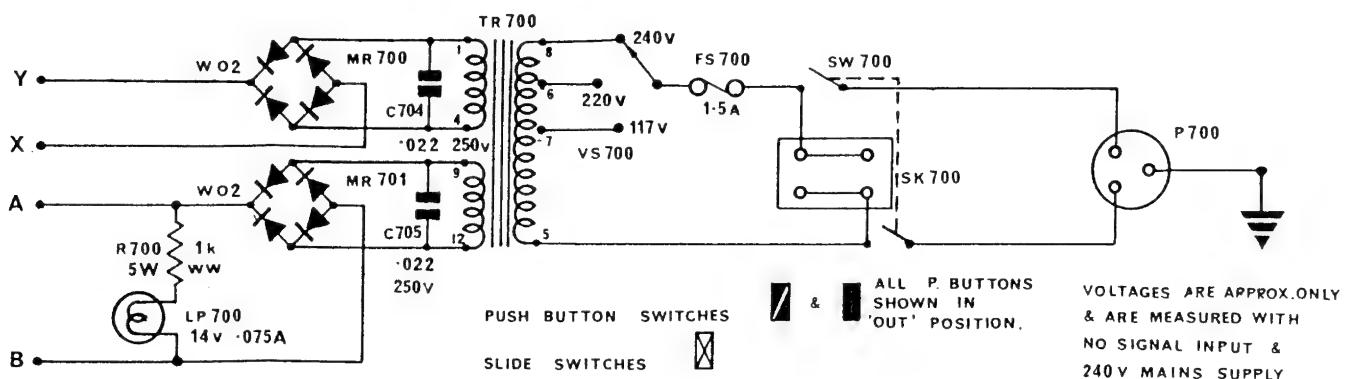
# **PROGRAPH F307 STEREO AMPLIFIER MK2**

BC 154

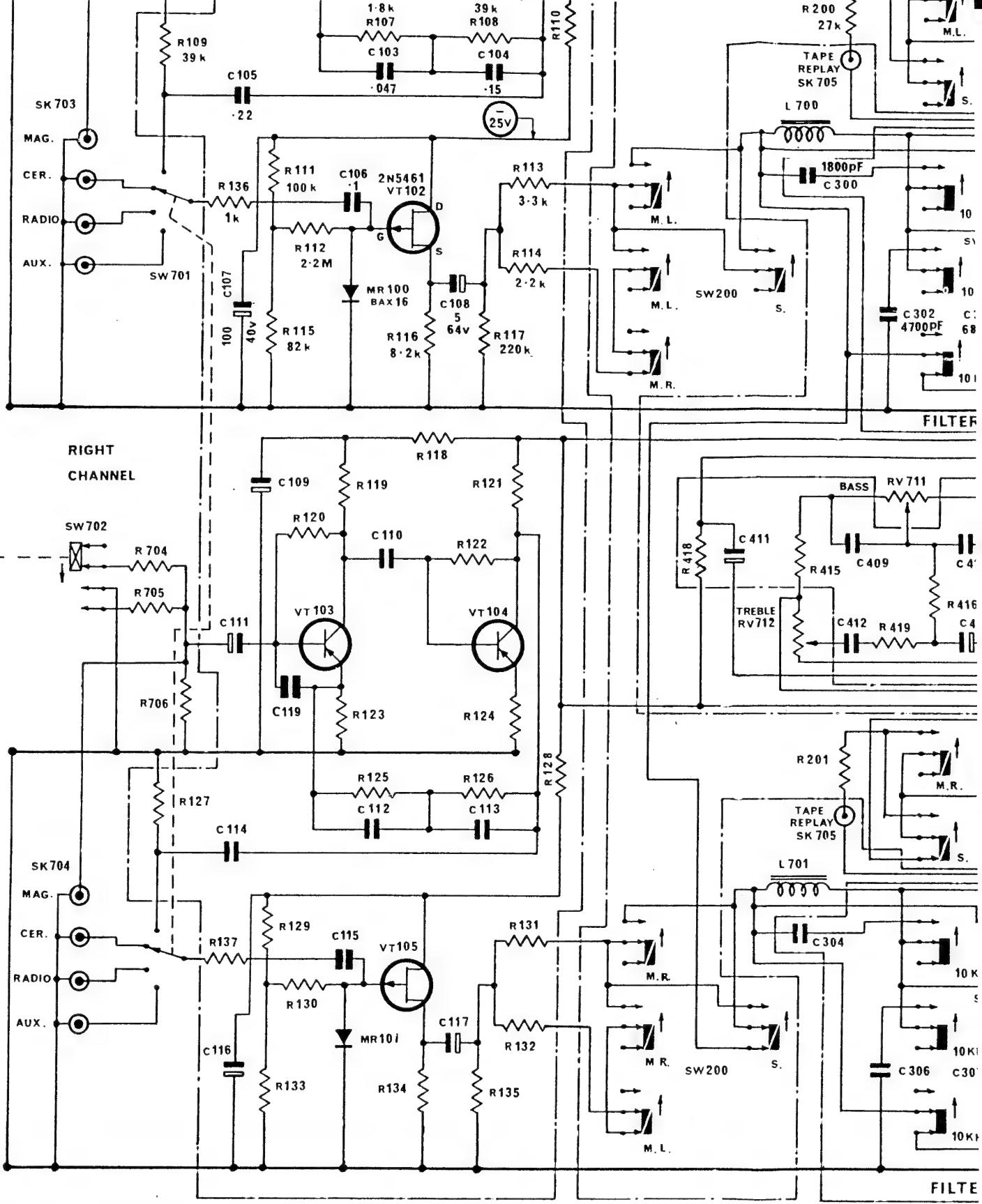
EXCEPT WHERE STATED OTHERWISE, RESISTOR  
AND CAPACITOR VALUES ARE GIVEN IN OHMS  
AND MICROFARADS. VALUES ARE SAME FOR  
BOTH CHANNELS.



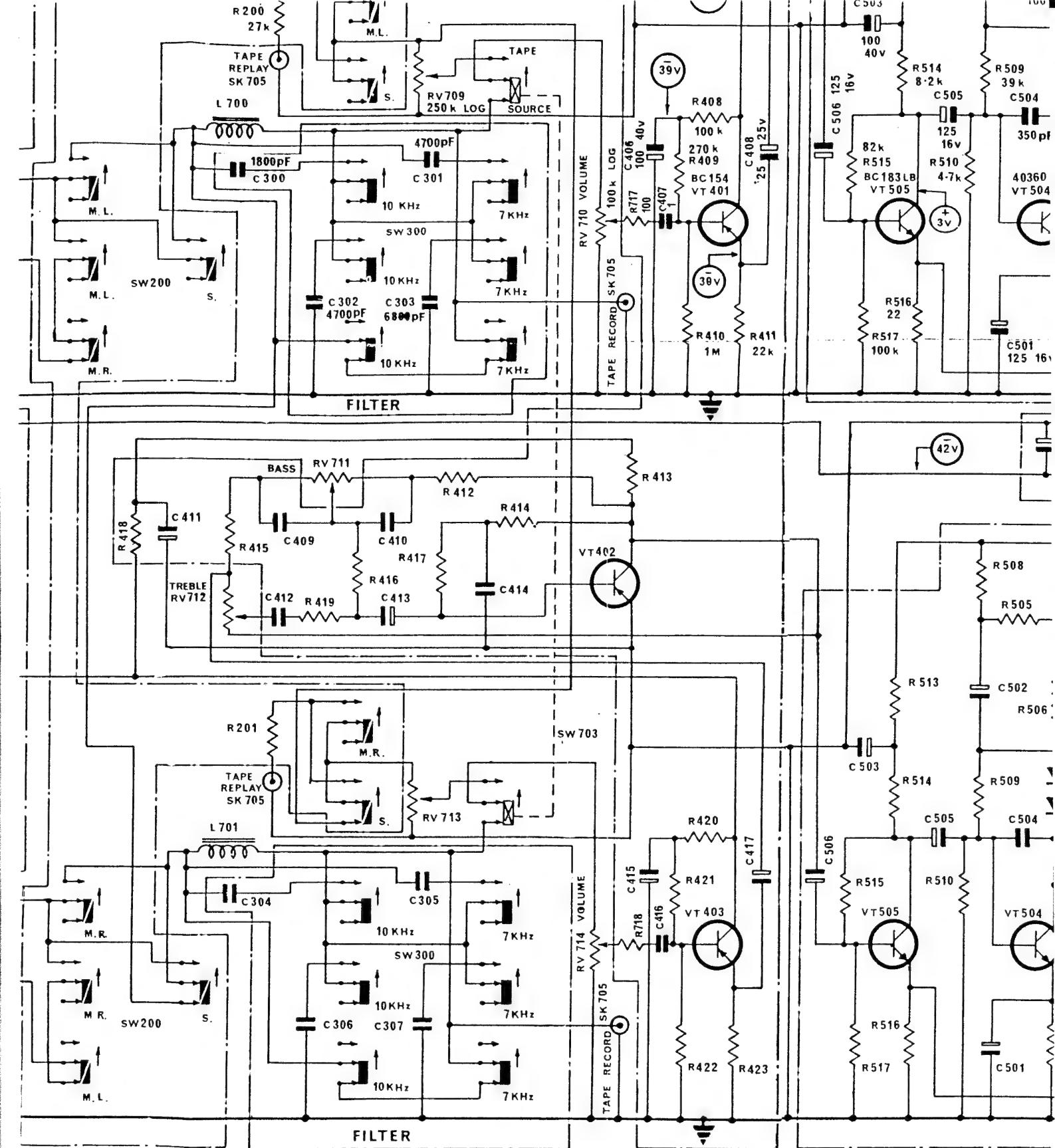
## AMPLIFIER MK2



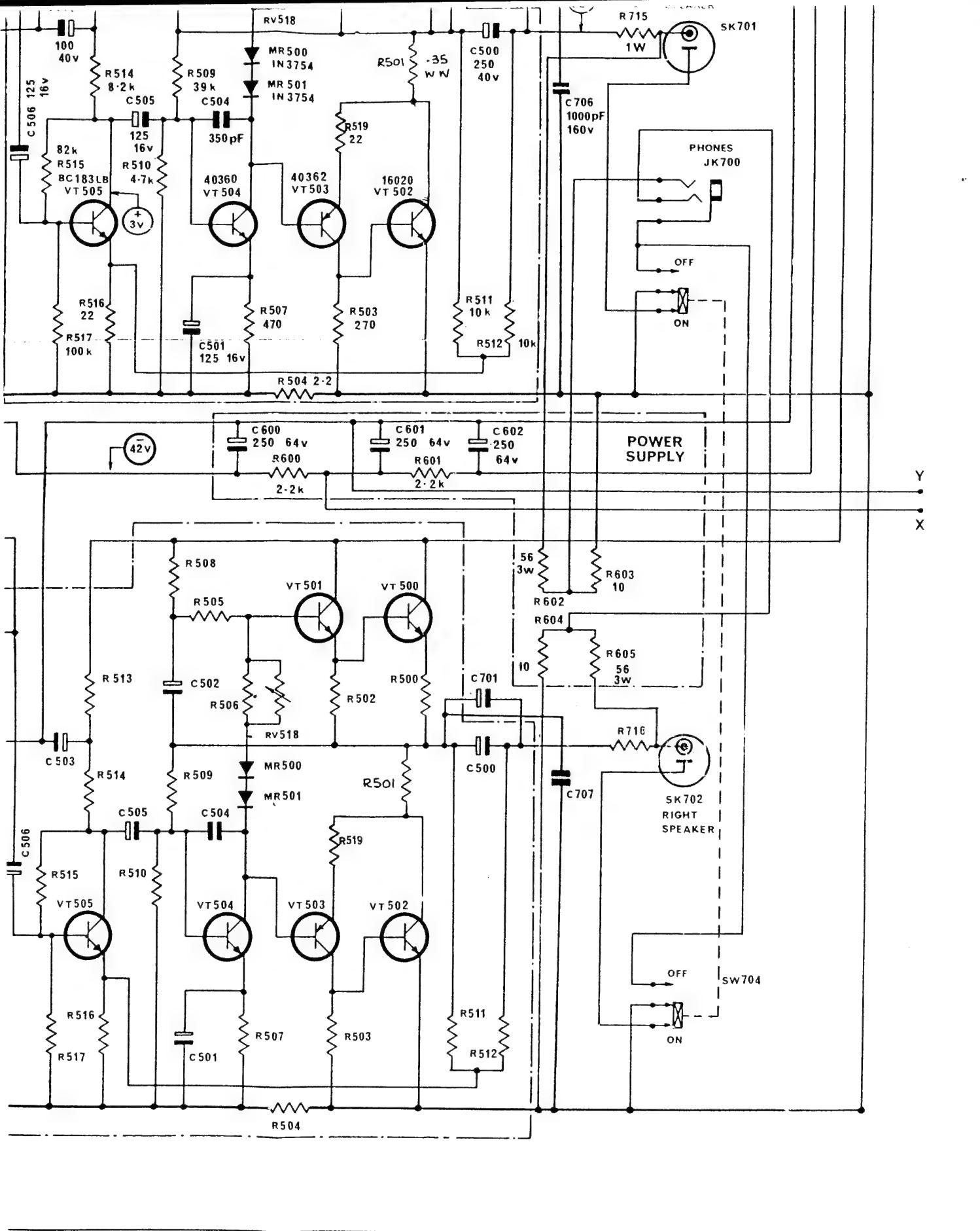
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Circuit diagram of F



Circuit diagram of Ferrograph Integrated Stereo Amplifier F307 MK 2



Amplifier F307 MK2

250-003, ISSUE 14A

# PARTS LIST — F 307 :

*Circuit Reference* **100** PRE-AMPLIFIER BOARD ASSEMBLY 025-131 *Part Number*

<b>Resistors</b>				
R100	100 $\Omega$	$\frac{1}{2}$ W	20%	625-14-100K
R101	47K $\Omega$	$\frac{1}{2}$ W	5% Low noise	624-001
R102	2.2M $\Omega$	$\frac{1}{2}$ W	20%	625-14-2M2
R103	10K $\Omega$	$\frac{1}{2}$ W	10%	625-13-10K
R104	470K $\Omega$	$\frac{1}{2}$ W	10%	625-13-470K
R105	68 $\Omega$	$\frac{1}{2}$ W	5%	625-12-68
R106	470 $\Omega$	$\frac{1}{2}$ W	10%	625-13-470
R107	1.8K $\Omega$	$\frac{1}{2}$ W	5%	625-12-1K8
R108	39K $\Omega$	$\frac{1}{2}$ W	5%	625-12-39K
R109	39K $\Omega$	$\frac{1}{2}$ W	10%	625-13-39K
R110	10K $\Omega$	$\frac{1}{2}$ W	20%	625-14-10K
R111	100K $\Omega$	$\frac{1}{2}$ W	10%	625-13-100K
R112	2.2M $\Omega$	$\frac{1}{2}$ W	20%	625-14-2M2
R113	3.3K $\Omega$	$\frac{1}{2}$ W	5%	625-12-3K3
R114	2.2K $\Omega$	$\frac{1}{2}$ W	5%	625-12-2K2
R115	82K $\Omega$	$\frac{1}{2}$ W	10%	625-13-82K
R116	8.2K $\Omega$	$\frac{1}{2}$ W	10%	625-13-8K2
R117	220K $\Omega$	$\frac{1}{2}$ W	20%	625-14-220K
R118	100K $\Omega$	$\frac{1}{2}$ W	20%	625-14-100K
R119	47K $\Omega$	$\frac{1}{2}$ W	5% Low noise	624-001
R120	2.2M $\Omega$	$\frac{1}{2}$ W	20%	625-14-2M2
R121	10K $\Omega$	$\frac{1}{2}$ W	10%	625-13-10K
R122	470K $\Omega$	$\frac{1}{2}$ W	10%	625-13-470K
R123	68 $\Omega$	$\frac{1}{2}$ W	5%	625-12-68
R124	470 $\Omega$	$\frac{1}{2}$ W	10%	625-13-470
R125	1.8K $\Omega$	$\frac{1}{2}$ W	5%	625-12-1K8
R126	39K $\Omega$	$\frac{1}{2}$ W	5%	625-12-39K
R127	39K $\Omega$	$\frac{1}{2}$ W	10%	625-13-39K
R128	10K $\Omega$	$\frac{1}{2}$ W	20%	625-14-10K
R129	100K $\Omega$	$\frac{1}{2}$ W	10%	625-13-100K
R130	2.2M $\Omega$	$\frac{1}{2}$ W	20%	625-14-2M2
R131	3.3K $\Omega$	$\frac{1}{2}$ W	5%	625-12-3K3
R132	2.2K $\Omega$	$\frac{1}{2}$ W	5%	625-12-2K2
R133	82K $\Omega$	$\frac{1}{2}$ W	10%	625-13-82K
R134	8.2K $\Omega$	$\frac{1}{2}$ W	10%	625-13-8K2
R135	220K $\Omega$	$\frac{1}{2}$ W	20%	625-14-220K
R136	1K $\Omega$	$\frac{1}{2}$ W	10%	625-13-1K
R137	1K $\Omega$	$\frac{1}{2}$ W	10%	625-13-1K
<b>Capacitors</b>				
C100	25 $\mu$ F	25V	Electrolytic	130-016
C101	0.22 $\mu$ F	250V	10%	131-508
C102	5 $\mu$ F	64V	Electrolytic	130-007
C103	0.047 $\mu$ F	250V	10%	131-506
C104	0.15 $\mu$ F	250V	10%	131-502
C105	0.22 $\mu$ F	250V	10%	131-508
C106	0.1 $\mu$ F	250V	20%	131-507
C107	100 $\mu$ F	40V	Electrolytic	130-001
C108	5 $\mu$ F	64V	Electrolytic	130-007
C109	25 $\mu$ F	25V	Electrolytic	130-016
C110	0.22 $\mu$ F	250V	10%	131-508
C111	5 $\mu$ F	64V	Electrolytic	130-007
C112	0.047 $\mu$ F	250V	10%	131-506
C113	0.15	250V	10%	131-502
C114	0.22 $\mu$ F	250V	10%	131-508
C115	0.1 $\mu$ F	250V	20%	131-507
C116	100 $\mu$ F	40V	Electrolytic	130-001
C117	5 $\mu$ F	64V	Electrolytic	130-007

*Circuit Reference* **200** MODE SWITCHING BOARD ASSEMBLY 025-131 *Part Number*

<b>Resistors</b>				
R200	27K $\Omega$	$\frac{1}{2}$ W	10%	
R201	27K $\Omega$	$\frac{1}{2}$ W	10%	
<b>Miscellaneous</b>				
SW200	Mode Selector Switch	(push button)		

*Circuit Reference* **300** FILTER BOARD ASSEMBLY 025-131 *Part Number*

<b>Capacitors</b>				
C300	1,800pf	125V	10%	
C301	0.047 $\mu$ F	250V	10%	
C302	0.047 $\mu$ F	250V	10%	
C303	0.068 $\mu$ F	250V	10%	
C304	1,800pf	125V	10%	
<b>Miscellaneous</b>				
SW300	Filter Switch	(push button)		

*Circuit Reference* **400** TONE & GAIN CONTROL BOARD ASSEMBLY 025-131 *Part Number*

<b>Resistors</b>				
R400	2.7K $\Omega$	$\frac{1}{2}$ W	5%	
R401	10K $\Omega$	$\frac{1}{2}$ W	10%	
R402	470K $\Omega$	$\frac{1}{2}$ W	20%	
R403	2.7K $\Omega$	$\frac{1}{2}$ W	5%	
R404	2.2K $\Omega$	$\frac{1}{2}$ W	10%	
R405	470K $\Omega$	$\frac{1}{2}$ W	20%	
R406	27K $\Omega$	$\frac{1}{2}$ W	20%	
R407	1K $\Omega$	$\frac{1}{2}$ W	10%	
R408	100K $\Omega$	$\frac{1}{2}$ W	10%	
R409	270K $\Omega$	$\frac{1}{2}$ W	10%	
<b>Capacitors</b>				
R410	1M $\Omega$	$\frac{1}{2}$ W	10%	
R411	22K $\Omega$	$\frac{1}{2}$ W	10%	
R412	2.7K $\Omega$	$\frac{1}{2}$ W	5%	
R413	10K $\Omega$	$\frac{1}{2}$ W	10%	
R414	470K $\Omega$	$\frac{1}{2}$ W	20%	
R415	2.7K $\Omega$	$\frac{1}{2}$ W	5%	
R416	2.2K $\Omega$	$\frac{1}{2}$ W	10%	
R417	470K $\Omega$	$\frac{1}{2}$ W	20%	
R418	27K $\Omega$	$\frac{1}{2}$ W	20%	
R419	1K $\Omega$	$\frac{1}{2}$ W	10%	
R420	100K $\Omega$	$\frac{1}{2}$ W	10%	
R421	270K $\Omega$	$\frac{1}{2}$ W	10%	
R422	1M $\Omega$	$\frac{1}{2}$ W	10%	
R423	22K $\Omega$	$\frac{1}{2}$ W	10%	
<b>Capacitors</b>				
C400	0.15 $\mu$ F	250V	10%	
C401	0.15 $\mu$ F	250V	10%	
C402	160 $\mu$ F	25V	Electrolytic	

# F E R R O G R A P H

## ARTS LIST — F307 STEREO AMPLIFIER MK.2 (Serial No. A2000 onwards)

<i>Circuit Reference</i>	<b>200</b>	MODE SWITCHING BOARD	ASSEMBLY 025-132	Part Number	<i>Circuit Reference</i>	TONE & GAIN CONTROL BOARD (continued)				<i>Part Number</i>
00	Resistors				C415	100 $\mu$ F	40V	Electrolytic		130-00
01	27K $\Omega$	$\frac{1}{2}$ W	10%	625-13-27K	C416	1 $\mu$ F	250V	10%		131-50
01	27K $\Omega$	$\frac{1}{2}$ W	10%	625-13-27K	C417	25 $\mu$ F	25V	Electrolytic		130-01
200	Miscellaneous					Miscellaneous				
	Mode Selector Switch (push button)			749-001	VT400	Transistor BC154 (or BC214LB)				825-00
					VT401	Transistor BC154				825-00
					VT402	Transistor BC154 (or BC214LB)				825-00
					VT403	Transistor BC154				825-00
<i>Circuit Reference</i>	<b>300</b>	FILTER BOARD	ASSEMBLY 025-133	Part Number	<i>Circuit Reference</i>	<b>500</b>	POWER AMPLIFIER BOARD	ASSEMBLY 025-135	<i>Part Number</i>	
00	Capacitors					Resistors (R) and Potentiometers (RV)				
01	1,800pf	125V	10%	131-764	R500	0.35 $\Omega$	1W	Wire-wound		626-00
01	·0047 $\mu$ F	250V	10%	131-510	R501	0.35 $\Omega$	1W	Wire-wound		626-00
02	·0047 $\mu$ F	250V	10%	131-510	R502	270 $\Omega$	$\frac{1}{2}$ W	5%		625-12
03	·0068 $\mu$ F	250V	10%	131-504	R503	270 $\Omega$	$\frac{1}{2}$ W	5%		625-12
04	1,800pf	125V	10%	131-764	R504	2·2 $\Omega$	$\frac{1}{2}$ W	$\pm \frac{1}{2} \Omega$		625-14
05	·0047 $\mu$ F	250V	10%	131-510	R505	4·7K $\Omega$	$\frac{1}{2}$ W	10%		625-13
06	·0047 $\mu$ F	250V	10%	131-510	R506	160 $\Omega$	$\frac{1}{2}$ W	20%		624-00
07	·0068 $\mu$ F	250V	10%	131-504	R507	470 $\Omega$	$\frac{1}{2}$ W	10%		625-13
300	Miscellaneous				R508	1K $\Omega$	$\frac{1}{2}$ W	10%		625-13
	Filter Switch (push button)			749-001	R509	39K $\Omega$	$\frac{1}{2}$ W	5%		625-12
					R510	4·7K $\Omega$	$\frac{1}{2}$ W	10%		625-13
					R511	10K $\Omega$	$\frac{1}{2}$ W	10%		625-13
					R512	10K $\Omega$	$\frac{1}{2}$ W	10%		625-13
					R513	8·2K $\Omega$	$\frac{1}{2}$ W	10%		625-13
					R514	8·2K $\Omega$	$\frac{1}{2}$ W	10%		625-13
<i>Circuit Reference</i>	<b>400</b>	TONE & GAIN CONTROL BOARD	ASSEMBLY 025-134	Part Number		<b>500</b>	POWER AMPLIFIER BOARD	ASSEMBLY 025-135	<i>Part Number</i>	
00	Resistors				R515	82K $\Omega$	$\frac{1}{2}$ W	10%		625-13
01	2·7K $\Omega$	$\frac{1}{2}$ W	5%	625-12-2K7	R516	22 $\Omega$	$\frac{1}{2}$ W	5%		625-12
01	10K $\Omega$	$\frac{1}{2}$ W	10%	625-13-10K	R517	100K $\Omega$	$\frac{1}{2}$ W	10%		625-13
02	470K $\Omega$	$\frac{1}{2}$ W	20%	625-14-470K	RV518	500 $\Omega$	Linear			582-02
03	2·7K $\Omega$	$\frac{1}{2}$ W	5%	625-12-2K7	R519	22 $\Omega$	$\frac{1}{2}$ W	10%		625-07
04	2·2K $\Omega$	$\frac{1}{2}$ W	10%	625-13-2K2		Capacitors				
05	470K $\Omega$	$\frac{1}{2}$ W	20%	625-14-470K	C500	250 $\mu$ F	40V	Electrolytic		130-00
06	27K $\Omega$	$\frac{1}{2}$ W	20%	625-14-27K	C501	125 $\mu$ F	16V	Electrolytic		130-00
07	1K $\Omega$	$\frac{1}{2}$ W	10%	625-13-1K	C502	32 $\mu$ F	40V	Electrolytic		130-01
08	100K $\Omega$	$\frac{1}{2}$ W	10%	625-13-100K	C503	100 $\mu$ F	40V	Electrolytic		130-00
09	270K $\Omega$	$\frac{1}{2}$ W	10%	625-13-270K	C504	350pf	160V	10%		131-76
10	1M $\Omega$	$\frac{1}{2}$ W	10%	625-13-1M	C505	125 $\mu$ F	16V	Electrolytic		130-00
11	22K $\Omega$	$\frac{1}{2}$ W	10%	625-13-22K	C506	125 $\mu$ F	16V	Electrolytic		130-00
12	2·7K $\Omega$	$\frac{1}{2}$ W	5%	625-12-2K7		Miscellaneous				
13	10K $\Omega$	$\frac{1}{2}$ W	10%	625-13-10K	VT500	Transistor 16020				825-01
14	470K $\Omega$	$\frac{1}{2}$ W	20%	625-14-470K	VT501	Transistor 40360				825-00
15	2·7K $\Omega$	$\frac{1}{2}$ W	5%	625-12-2K7	VT502	Transistor 16020				825-01
16	2·2K $\Omega$	$\frac{1}{2}$ W	10%	625-13-2K2	VT503	Transistor 40362				825-00
17	470K $\Omega$	$\frac{1}{2}$ W	20%	625-14-470K	VT504	Transistor 40360				825-00
18	27K $\Omega$	$\frac{1}{2}$ W	20%	625-14-27K	VT505	Transistor BC183LB (or BC108, 40233)				825-01
19	1K $\Omega$	$\frac{1}{2}$ W	10%	625-13-1K						
20	100K $\Omega$	$\frac{1}{2}$ W	10%	625-13-100K	MR500	Diode 1N3754				290-00
21	270K $\Omega$	$\frac{1}{2}$ W	10%	625-13-270K	MR501	Diode 1N3754				290-00
22	1M $\Omega$	$\frac{1}{2}$ W	10%	625-13-1M						
23	22K $\Omega$	$\frac{1}{2}$ W	10%	625-13-22K						
	Capacitors					<i>Circuit Reference</i>	<b>600</b>	POWER SUPPLY BOARD	ASSEMBLY 025-136	<i>Part Number</i>
00	0·15 $\mu$ F	250V	10%	131-502						
01	0·15 $\mu$ F	250V	10%	131-502						
02	160 $\mu$ F	25V	Electrolytic	130-011						

2 (Serial No. A2000 onwards)

TONE & GAIN  
CONTROL BOARD (continued)

Part  
Number

μF	40V	Electrolytic	130-001
	250V	10%	131-503
	25V	Electrolytic	130-016

cellaneous			
istor BC154 (or BC214LB)			825-007
istor BC154			825-007
istor BC154 (or BC214LB)			825-007
istor BC154			825-007

00 POWER AMPLIFIER ASSEMBLY

Part  
Number

istor (R) and Potentiometers (RV)			
Ω 1W	Wire-wound		626-005
Ω 1W	Wire-wound		626-005
Ω ½W	5%		625-12-270
Ω ½W	5%		625-12-270
Ω ½W	± ½Ω		625-14-2D2

Ω ½W	10%		625-13-4K7
Ω ½W	20%		624-008
Ω ½W	10%		625-13-470
Ω ½W	10%		625-13-1K
Ω ½W	5%		625-12-39K

Ω ½W	10%		625-13-4K7
Ω ½W	10%		625-13-10K
Ω ½W	10%		625-13-10K
Ω ½W	10%		625-13-8K2
Ω ½W	10%		625-13-8K2

Ω ½W	10%		625-13-82K
Ω ½W	5%		625-12-22
Ω ½W	10%		625-13-100K
Ω Linear			582-026
Ω ½W	10%		625-07-22

acitors			
μF	40V	Electrolytic	130-003
μF	16V	Electrolytic	130-002
μF	40V	Electrolytic	130-013
μF	40V	Electrolytic	130-001
μF	160V	10%	131-763

μF	16V	Electrolytic	130-002
μF	16V	Electrolytic	130-002
cellaneous			
istor 16020			825-019
istor 40360			825-000
istor 16020			825-019
istor 40362			825-001
istor 40360			825-000

istor BC183LB (or BC108, 40233)			825-015
ne 1N3754			290-000
ne 1N3754			290-000

00 POWER SUPPLY ASSEMBLY

Part  
Number

Circuit  
Reference

700

GENERAL

Part  
Number

Resistors (R) and Potentiometers (RV)			
R700	1K Ω	6W	Wire-wound
R701	220K Ω	½W	5%
R702	100K Ω	½W	5%
R703	330K Ω	½W	5%
R704	220K Ω	½W	5%
R705	100K Ω	½W	5%
R706	330K Ω	½W	5%
RV707	50K Ω	Linear (with RV712) "Treble"	
RV708	50K Ω	Linear (with RV711) "Bass"	
RV709	250K Ω	Logarithmic "Tape input left"	
RV710	100K Ω	Logarithmic (with RV714) "Volume"	
RV711	50K Ω	Linear (with RV708) "Bass"	
RV712	50K Ω	Linear (with RV707) "Treble"	
RV713	250K Ω	Logarithmic "Tape input right"	
RV714	100K Ω	Logarithmic (with RV710) "Volume"	
R715	0.35 Ω	± 0.05 Ω	Wire-wound
R716	0.35 Ω	± 0.05 Ω	Wire-wound
R717	100 Ω	½W	10%
R718	100 Ω	½W	10%
Capacitors			
C700	800μF	40V	Electrolytic
C701	800μF	40V	Electrolytic
C702	1000μF	70V	Electrolytic
C703	1000μF	70V	Electrolytic
C704	0.022μF	250V	10%
C705	0.022μF	250V	10%
C706	1000pF	160V	10%
C707	1000pF	160V	10%
Miscellaneous			
SW700	Mains Switch		
SW701	Input Switch		
SW702	Magnetic P.U. Switch		
SW703	Output Switch		
SW704	Speaker Switch		
L700	Inductor (Type 727)		
L701	Inductor (Type 727)		
TR700	Mains Transformer (T1703)		
MR700	Bridge Rectifier WO2 (or WO4, OSH01-200)		
MR701	Bridge Rectifier WO2 (or WO4, OSH01-200)		
JK700	Jack Socket, 3 way (Gauge A)		
P700	Plug, 3 way (Mains input)		
SK700	Socket, 2 x 2 way (Mains outlets)		
SK701	D.I.N. Socket, 2 way (Left Speaker)		
SK702	D.I.N. Socket, 2 way (Right Speaker)		
SK703	Phono Sockets (Yellow) "Left"		
SK704	Phono Sockets (Blue) "Right"		
SK705	Phono Sockets (Yellow-Blue) "Tape"		
VS700	Voltage Selector		
LP700	Lamp, LES 14V		
FS700	Mains Fuse (1.5 Amp - 20 mm. x 5 mm. dia.)		
FS701	D.C. Fuse (1 Amp - 20 mm. x 5 mm. dia.)		
FS702	D.C. Fuse (1 Amp - 20 mm. x 5 mm. dia.)		
	Mains Fuse Holder		

R113	3.3K $\Omega$	$\frac{1}{2}$ W	5%	625-12-3K3	C301	0.047 $\mu$ F	250V	10%
R114	2.2K $\Omega$	$\frac{1}{2}$ W	5%	625-12-2K2	C302	0.047 $\mu$ F	250V	10%
R115	82K $\Omega$	$\frac{1}{2}$ W	10%	625-13-82K	C303	0.068 $\mu$ F	250V	10%
R116	8.2K $\Omega$	$\frac{1}{2}$ W	10%	625-13-8K2	C304	1.800pf	125V	10%
R117	220K $\Omega$	$\frac{1}{2}$ W	20%	625-14-220K	C305	0.047 $\mu$ F	250V	10%
R118	100K $\Omega$	$\frac{1}{2}$ W	20%	625-14-100K	C306	0.047 $\mu$ F	250V	10%
R119	47K $\Omega$	$\frac{1}{2}$ W	5% Low noise	624-001	C307	0.068 $\mu$ F	250V	10%
R120	2.2M $\Omega$	$\frac{1}{2}$ W	20%	625-14-2M2	Miscellaneous			
R121	10K $\Omega$	$\frac{1}{2}$ W	10%	625-13-10K	Filter Switch (push button)			
R122	470K $\Omega$	$\frac{1}{2}$ W	10%	625-13-470K				
R123	68 $\Omega$	$\frac{1}{2}$ W	5%	625-12-68				
R124	470 $\Omega$	$\frac{1}{2}$ W	10%	625-13-470				
R125	1.8K $\Omega$	$\frac{1}{2}$ W	5%	625-12-1K8	Circuit Reference			
R126	39K $\Omega$	$\frac{1}{2}$ W	5%	625-12-39K	400 TONE & GAIN			
R127	39K $\Omega$	$\frac{1}{2}$ W	10%	625-13-39K	CONTROL BOARD			
R128	10K $\Omega$	$\frac{1}{2}$ W	20%	625-14-10K				
R129	100K $\Omega$	$\frac{1}{2}$ W	10%	625-13-100K				
R130	2.2M $\Omega$	$\frac{1}{2}$ W	20%	625-14-2M2	Resistors			
R131	3.3K $\Omega$	$\frac{1}{2}$ W	5%	625-12-3K3	R400	2.7K $\Omega$	$\frac{1}{2}$ W	5%
R132	2.2K $\Omega$	$\frac{1}{2}$ W	5%	625-12-2K2	R401	10K $\Omega$	$\frac{1}{2}$ W	10%
R133	82K $\Omega$	$\frac{1}{2}$ W	10%	625-13-82K	R402	470K $\Omega$	$\frac{1}{2}$ W	20%
R134	8.2K $\Omega$	$\frac{1}{2}$ W	10%	625-13-8K2	R403	2.7K $\Omega$	$\frac{1}{2}$ W	5%
R135	220K $\Omega$	$\frac{1}{2}$ W	20%	625-14-220K	R404	2.2K $\Omega$	$\frac{1}{2}$ W	10%
R136	1K $\Omega$	$\frac{1}{2}$ W	10%	625-13-1K	R405	470K $\Omega$	$\frac{1}{2}$ W	20%
R137	1K $\Omega$	$\frac{1}{2}$ W	10%	625-13-1K	R406	27K $\Omega$	$\frac{1}{2}$ W	20%
Capacitors								
C100	25 $\mu$ F	25V	Electrolytic	130-016	R407	1K $\Omega$	$\frac{1}{2}$ W	10%
C101	0.22 $\mu$ F	250V	10%	131-508	R408	100K $\Omega$	$\frac{1}{2}$ W	10%
C102	5 $\mu$ F	64V	Electrolytic	130-007	R409	270K $\Omega$	$\frac{1}{2}$ W	10%
C103	.047 $\mu$ F	250V	10%	131-506				
C104	0.15 $\mu$ F	250V	10%	131-502				
C105	0.22 $\mu$ F	250V	10%	131-508	Capacitors			
C106	0.1 $\mu$ F	250V	20%	131-507	R410	2.7K $\Omega$	$\frac{1}{2}$ W	5%
C107	100 $\mu$ F	40V	Electrolytic	130-001	R411	2.2K $\Omega$	$\frac{1}{2}$ W	10%
C108	5 $\mu$ F	64V	Electrolytic	130-007	R412	2.7K $\Omega$	$\frac{1}{2}$ W	5%
C109	25 $\mu$ F	25V	Electrolytic	130-016	R413	10K $\Omega$	$\frac{1}{2}$ W	10%
C110	0.22 $\mu$ F	250V	10%	131-508	R414	470K $\Omega$	$\frac{1}{2}$ W	20%
C111	5 $\mu$ F	64V	Electrolytic	130-007	R415	2.7K $\Omega$	$\frac{1}{2}$ W	5%
C112	.047 $\mu$ F	250V	10%	131-506	R416	2.2K $\Omega$	$\frac{1}{2}$ W	10%
C113	0.15	250V	10%	131-502	R417	470K $\Omega$	$\frac{1}{2}$ W	20%
C114	0.22 $\mu$ F	250V	10%	131-508	R418	27K $\Omega$	$\frac{1}{2}$ W	20%
C115	0.1 $\mu$ F	250V	20%	131-507	R419	1K $\Omega$	$\frac{1}{2}$ W	10%
C116	100 $\mu$ F	40V	Electrolytic	130-001				
C117	5 $\mu$ F	64V	Electrolytic	130-007	Capacitors			
C118	1000pf	30V	2 $\frac{1}{2}$ %	131-768	C400	0.15 $\mu$ F	250V	10%
C119	1000pf	30V	2 $\frac{1}{2}$ %	131-768	C401	0.15 $\mu$ F	250V	10%
Miscellaneous								
VT100	Transistor BC154 (or BC214LB)			825-007	C402	160 $\mu$ F	25V	Electrolytic
VT101	Transistor BC154 (or BC214LB)			825-007	C403	.0068 $\mu$ F	250V	10%
VT102	F.E. Transistor 2N5461 (or BC219B)			825-017	C404	5 $\mu$ F	64V	Electrolytic
VT103	Transistor BC154 (or BC214LB)			825-007	C405	0.1 $\mu$ F	250V	20%
VT104	Transistor BC154 (or BC214LB)			825-007	C406	100 $\mu$ F	40V	Electrolytic
VT105	F.E. Transistor 2N5461 (or BC219B)			825-017	C407	1 $\mu$ F	250V	10%
MR100	Diode BAX 16 (or OA 200)			290-001	C408	25 $\mu$ F	25V	Electrolytic
MR101	Diode BAX 16 (or OA 200)			290-001	C409	0.15 $\mu$ F	250V	10%
					C410	0.15 $\mu$ F	250V	10%
					C411	160 $\mu$ F	25V	Electrolytic
					C412	.0068 $\mu$ F	250V	10%
					C413	5 $\mu$ F	64V	Electrolytic
					C414	0.1 $\mu$ F	250V	20%

C301	.0047 $\mu$ F	250V	10%	131-510
C302	.0047 $\mu$ F	250V	10%	131-510
C303	.0068 $\mu$ F	250V	10%	131-504
C304	1,800pf	125V	10%	131-764
C305	.0047 $\mu$ F	250V	10%	131-510
C306	.0047 $\mu$ F	250V	10%	131-510
C307	.0068 $\mu$ F	250V	10%	131-504

	Miscellaneous			
SW300	Filter Switch (push button)		749-001	

*Circuit Reference* **400** TONE & GAIN CONTROL BOARD ASSEMBLY **025-134** *Part Number*

Resistors			
R400	2.7K $\Omega$	$\frac{1}{2}$ W	5%
R401	10K $\Omega$	$\frac{1}{2}$ W	10%
R402	470K $\Omega$	$\frac{1}{2}$ W	20%
R403	2.7K $\Omega$	$\frac{1}{2}$ W	5%
R404	2.2K $\Omega$	$\frac{1}{2}$ W	10%
R405	470K $\Omega$	$\frac{1}{2}$ W	20%
R406	27K $\Omega$	$\frac{1}{2}$ W	20%
R407	1K $\Omega$	$\frac{1}{2}$ W	10%
R408	100K $\Omega$	$\frac{1}{2}$ W	10%
R409	270K $\Omega$	$\frac{1}{2}$ W	10%
R410	1M $\Omega$	$\frac{1}{2}$ W	10%
R411	22K $\Omega$	$\frac{1}{2}$ W	10%
R412	2.7K $\Omega$	$\frac{1}{2}$ W	5%
R413	10K $\Omega$	$\frac{1}{2}$ W	10%
R414	470K $\Omega$	$\frac{1}{2}$ W	20%
R415	2.7K $\Omega$	$\frac{1}{2}$ W	5%
R416	2.2K $\Omega$	$\frac{1}{2}$ W	10%
R417	470K $\Omega$	$\frac{1}{2}$ W	20%
R418	27K $\Omega$	$\frac{1}{2}$ W	20%
R419	1K $\Omega$	$\frac{1}{2}$ W	10%
R420	100K $\Omega$	$\frac{1}{2}$ W	10%
R421	270K $\Omega$	$\frac{1}{2}$ W	10%
R422	1M $\Omega$	$\frac{1}{2}$ W	10%
R423	22K $\Omega$	$\frac{1}{2}$ W	10%

Capacitors			
C400	0.15 $\mu$ F	250V	10%
C401	0.15 $\mu$ F	250V	10%
C402	160 $\mu$ F	25V	Electrolytic
C403	.0068 $\mu$ F	250V	10%
C404	5 $\mu$ F	64V	Electrolytic
C405	0.1 $\mu$ F	250V	20%
C406	100 $\mu$ F	40V	Electrolytic
C407	1 $\mu$ F	250V	10%
C408	25 $\mu$ F	25V	Electrolytic
C409	0.15 $\mu$ F	250V	10%
C410	0.15 $\mu$ F	250V	10%
C411	160 $\mu$ F	25V	Electrolytic
C412	.0068 $\mu$ F	250V	10%
C413	5 $\mu$ F	64V	Electrolytic
C414	0.1 $\mu$ F	250V	20%

Resistors (R) and Potentiometers			
R500	0.35 $\Omega$	1W	Wire-wound
R501	0.35 $\Omega$	1W	Wire-wound
R502	270 $\Omega$	$\frac{1}{2}$ W	5%
R503	270 $\Omega$	$\frac{1}{2}$ W	5%
R504	2.2 $\Omega$	$\frac{1}{2}$ W	$\pm \frac{1}{2}$ $\Omega$
R505	4.7K $\Omega$	$\frac{1}{2}$ W	10%
R506	160 $\Omega$	$\frac{1}{2}$ W	20%
R507	470 $\Omega$	$\frac{1}{2}$ W	10%
R508	1K $\Omega$	$\frac{1}{2}$ W	10%
R509	39K $\Omega$	$\frac{1}{2}$ W	5%
R510	4.7K $\Omega$	$\frac{1}{2}$ W	10%
R511	10K $\Omega$	$\frac{1}{2}$ W	10%
R512	10K $\Omega$	$\frac{1}{2}$ W	10%
R513	8.2K $\Omega$	$\frac{1}{2}$ W	10%
R514	8.2K $\Omega$	$\frac{1}{2}$ W	10%

Capacitors			
C500	250 $\mu$ F	40V	Electrolytic
C501	125 $\mu$ F	16V	Electrolytic
C502	32 $\mu$ F	40V	Electrolytic
C503	100 $\mu$ F	40V	Electrolytic
C504	350pf	160V	10%

Miscellaneous			
VT500	Transistor 16020		
VT501	Transistor 40360		
VT502	Transistor 16020		
VT503	Transistor 40362		
VT504	Transistor 40360		
VT505	Transistor BC183LB (or BC108, 4023)		

Circuit Reference 600 POWER SUPPLY BOARD AS 025-134			
R600	2.2K $\Omega$	$\frac{1}{2}$ W	10%

Resistors			
R601	2.2K $\Omega$	$\frac{1}{2}$ W	10%
R602	56 $\Omega$	3W	10%
R603	10 $\Omega$	$\frac{1}{2}$ W	20%
R604	10 $\Omega$	$\frac{1}{2}$ W	20%
R605	56 $\Omega$	3W	10%

Capacitors			
C600	250 $\mu$ F	64V	Electrolytic
C601	250 $\mu$ F	64V	Electrolytic
C602	250 $\mu$ F	64V	Electrolytic

Resistors (W) and Potentiometers (kV)				RV713	250k $\Omega$	Logarithmic "Tape input right"	582-014		
0.35 $\Omega$ 1W Wire-wound				RV714	100k $\Omega$	Logarithmic (with RV710) "Volume"	582-016		
0.35 $\Omega$ 1W Wire-wound							582-013		
270 $\Omega$ $\frac{1}{2}$ W 5% 625-12-270				R715	0.35 $\Omega$	$\pm$ 0.5 $\Omega$ Wire-wound	626-005		
270 $\Omega$ $\frac{1}{2}$ W 5% 625-12-270				R716	0.35 $\Omega$	$\pm$ 0.5 $\Omega$ Wire-wound	626-005		
2.2 $\Omega$ $\frac{1}{2}$ W $\pm$ $\frac{1}{2}$ $\Omega$ 625-14-2D2				R717	100 $\Omega$	$\frac{1}{2}$ W 10%	625-10-100		
4.7k $\Omega$ $\frac{1}{2}$ W 10% 625-13-4K7				R718	100 $\Omega$	$\frac{1}{2}$ W 10%	625-10-100		
160 $\Omega$ $\frac{1}{2}$ W 20% 624-008									
470 $\Omega$ $\frac{1}{2}$ W 10% 625-13-470									
1K $\Omega$ $\frac{1}{2}$ W 10% 625-13-1K									
39K $\Omega$ $\frac{1}{2}$ W 5% 625-12-39K									
4.7k $\Omega$ $\frac{1}{2}$ W 10% 625-13-4K7									
10K $\Omega$ $\frac{1}{2}$ W 10% 625-13-10K									
10K $\Omega$ $\frac{1}{2}$ W 10% 625-13-10K									
3.2k $\Omega$ $\frac{1}{2}$ W 10% 625-13-8K2									
3.2k $\Omega$ $\frac{1}{2}$ W 10% 625-13-8K2									
32K $\Omega$ $\frac{1}{2}$ W 10% 625-13-82K									
22 $\Omega$ $\frac{1}{2}$ W 5% 625-12-22									
200K $\Omega$ $\frac{1}{2}$ W 10% 625-13-100K									
500 $\Omega$ Linear 582-026									
12 $\Omega$ $\frac{1}{2}$ W 10% 625-07-22									
Capacitors									
50 $\mu$ F 40V Electrolytic			130-003						
25 $\mu$ F 16V Electrolytic			130-002						
2 $\mu$ F 40V Electrolytic			130-013						
00 $\mu$ F 40V Electrolytic			130-001						
50pf 160V 10%			131-763						
25 $\mu$ F 16V Electrolytic			130-002						
25 $\mu$ F 16V Electrolytic			130-002						
Miscellaneous									
transistor 16020			825-019						
transistor 40360			825-000						
transistor 16020			825-019						
transistor 40362			825-001						
transistor 40360			825-000						
transistor BC183LB (or BC108, 40233)			825-015						
diode 1N3754			290-000						
diode 1N3754			290-000						
500 POWER SUPPLY BOARD ASSEMBLY 025-136 Part Number									
Resistors									
2K $\Omega$ $\frac{1}{2}$ W 10% 625-13-2K2									
2K $\Omega$ $\frac{1}{2}$ W 10% 625-13-2K2									
3 $\Omega$ 3W 10% 626-015									
3 $\Omega$ $\frac{1}{2}$ W 20% 625-14-10									
3 $\Omega$ $\frac{1}{2}$ W 20% 625-14-10									
3 $\Omega$ 3W 10% 626-015									
Capacitors									
50 $\mu$ F 64V Electrolytic			130-010						
50 $\mu$ F 64V Electrolytic			130-010						
50 $\mu$ F 64V Electrolytic			130-010						
Circuit Reference				ACCESSORIES		Part Number			
The following accessories are available for use with the F307 amplifier.									
						Phono Plug (Blue)	577-004		
						Phono Plug (Yellow)	577-005		
						D.I.N. Plug (Speaker)	577-003		
						Jack Plug, Gauge A (Phones)	577-011		
						Mains Outlet Plug (2 pin)	577-012		
						Mains Input Socket (3 pin)	692-000		
						Fuse (1A Amp., 20 mm. x 5 mm. dia.)	380-000		
						Fuse (1.5 Amp., 20 mm. x 5 mm. dia.)	380-004		
						Lamp Bulb LES.14V	455-002		